# PCM-4386

**Pentium® M 4" EPIC SBC with MIO/VGA/LCD/LVDS Ethernet/ USB2.0 and SSD**

# User Manual

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# Packing List

Before you begin installing your card, please make sure that the following materials have been shipped:

| Item | Part Number |
|---|---|
| 1 Startup manual | |
| 1 Utility CD | |
| 1 Mini jumper pack | 9689000002 |
| FLAT Cable 44P 20 cm 3Com & LPT 1.27 mm to D-sub (CN30) | 1700002034 |
| FLAT Cable 44P IDC 44P/44P/40P keyed 50 cm (CN27) | 1701440504 |
| Cable 20P/10P 10 cm EPIC ATX Power (CN1) | 1700002055 |
| Cable 6pin, 6-pin; 20 cm long: PS/2 KB & Mouse (CN19) | 1700060202 |
| Cable 2*4P/10P EPIC AT POWER 15 cm (CN1) | 1700003931 |
| USB CABLE 20 Pin TO 2 Port L=30 cm PCM-43 series (CN31) | 1700004891 |
| CABLE USB*2/10-2.0 mm 29 cm | 1700001267 (PCM-4386U series only) |

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

| Model Number | Description |
|---|---|
| PCM-4386F-M0A2E | Celeron M 600MHz (512K L2) w/Dual LAN/VGA/LCD/CFC |
| PCM-4386F-S0A2E | Celeron M 1.0GHz (0 L2) w/Dual LAN/VGA/LCD/CFC |
| PCM-4386U-S0A2E | Celeron M 1.0 GHz (0 L2) w/Dual LAN/VGA/LCD/USB-DOM |
| PCM-4386Z-S0A2E | PCM-4386F-S0A2E with phoenix gold package |
| PCM-4386Z2-S0A2E | PCM-4386F-S0A2E with phoenix platinum package |

**Optional Accessories**

| | |
|---|---|
| PCM-410A-00A1E | AC97 Audio/USB module for PCM-4386/4386 series |
| PCM-410C-00A1E | COM/LPT daughter board for EPIC |

# Additional Information and Assistance

1. Visit the web site at where you can find the latest information about the product.
2. Contact your distributor, sales representative, or customer service center for technical support if you need additional assistance.

Please have the following information ready before you call:

- Product name and serial number
- Description of your peripheral attachments
- Description of your software (operating system, version, application software, etc.)
- A complete description of the problem
- The exact wording of any error messages

# FCC

This device complies with the requirements in part 15 of the FCC rules: Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this device in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense. The user is advised that any equipment changes or modifications not expressly approved by the party responsible for compliance would void the compliance to FCC regulations and therefore, the user's authority to operate the equipment.

*Caution!* *There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.*

# Contents

# General Information

This chapter gives background information on the PCM-4386.

# Chapter 1    General Information

## 1.1    Introduction

The PCM-4386 is an EPIC SBC (Single Board Computer) with high performance and lower power needs based on Celeron M processors. The PCM-4386, in conjunction with Intel 852GM chipset, supports processors clocked at up to 1.0 GHz, four USB 2.0 compatible ports, up to 2 PCI Fast or Gigabit Ethernet interface, 2 Channel LVDS interface and can accommodate up to 1 GB of DDR RAM memory.

SpeedStep technology is another important features for PCM-4386 which can save energy and ensure longer battery life, since it allows the operating system to reduce the processor clock speed when less work is being done.

## 1.2    Specifications

### 1.2.1    Standard 4" Biscuit SBC Functions

- **CPU**: Embedded Celeron M Processor supported at Front Side Bus (FSB) 400MHz
- **System Memory**: 1x SODIMM socket, support DDR 128 MB to 1GB, accept 128/256/512/1000 MB DDR200/266 DRAM
- **2nd Cache Memory**: Depends on CPU type up to 512 KB
- **System Chipset**: Intel 852GM GMCH/ICH4 chipset
- **BIOS**: AWARD 4 Mbit Flash BIOS
- **Watchdog timer**: 255 levels timer interval
- **Expansion Interface**: MIO interface, integrated PCI2.0, USB2.0, SMBus, AC97
- **Battery**: Lithium 3 V/196 mAH
- **Power management**: Supports power saving modes including Normal/Standby/Suspend modes. APM 1.2, ACPI compliant
- **Enhanced IDE interface**: One channel supports up to 2 EIDE devices. BIOS auto-detect, PIO Mode 3 or Mode 4, supports UDMA 33 mode
- **Serial ports**: 4 serial RS-232 ports, COM1/3/4: RS-232, COM2: RS-232/422/485
- **Parallel port**: One parallel port, supports SPP/EPP/ECP mode

- • **Keyboard/mouse** connector: Supports one standard PC/AT keyboard and a PS/2 mouse
- • **Audio**: Supports the AC97 Audio Interface (with PCM-410A-00A1E option)
- • **USB**: 4 USB 2.0 compliant universal serial bus ports
- • **Solid State Disk (SSD):** Supports one 50-pin socket for CFC type I/II (PCM-4386F series only)

## 1.2.2   VGA/LVDS Interface

- • **Chipset**: Intel 852GM Graphic Memory Control Hub (GMCH)
- • **Memory Size**: Optimized Shared Memory Architecture, supports 64MB frame buffer using system memory
- • **Resolution**: CRT display Mode: pixel resolution up to 1600 x 1200 @ 85 Hz and 2048 x 536 @ 75 Hz
- • **LVDS Interface**: up to UXGA panel resolution with frequency range from 25MHz to 112MHz
- • **Dual Independent Display**: supports CRT+LVDS
- • **LVDS**: supports 2 channel 36-bits LVDS LCD Panel

## 1.2.3   Ethernet Interface

- • **Chipset supports**:
    - – 10/100 Mbps: Intel 82551ER
    - – 10/100/1000 Mbps: Intel 82541PI (optional)
- • **Interface**: 2 x RJ45, Standard IEEE 802.3u (100Base-T)

## 1.2.4   Audio Function

- • **Chipset**: Intel 82801DB I/O Controller Hub 4 (ICH4) AC97 interface
- • **Audio controller**: Support AC97 3D Audio by PCM-410A-00A1E

## 1.2.5 Mechanical and Environmental

- Dimensions: 115 x 165 mm (4.5" x 6.5") Mechanical Drawing (dxf file) is available.
- Power Supply Type: ATX, AT
- Power Requirement:
    - ATX:
      +5 V ±5%, ±12 V ±5% (optional)
    - AT:
      5 V only to boot up, 12 V for LCD inverter and PC/104 module (12 V optional for PC104 add on card and LCD inverter)
- Power Consumption: (Celeron M 600 with 256 MB DDR266)
    - Max (HCT): 2.63 A @ 5 V, 0.03 A @ 12 V
    - Typical: 2.62 A @ 5 V, 0.03 A @ 12 V, 0.49 A @ 3.3 V, 1.08 A @ 5 VSB
- Operating Temperature: 0 ~ 60° C (32 ~ 140° F)
- Operating Humidity: 0% ~ 90% relative humidity, noncondensing
- Storage Temperature:
    - Standard products (0 ~ 60° C)
    - Storage temperature: -20 ~ 70° C
- Storage Humidity:
    - Standard products (0 ~ 60° C)
    - Relative humidity: 95% @ 60° C
- Weight: 0.85 kg (reference weight of total package)

## 1.3 Board Layout and Dimensions
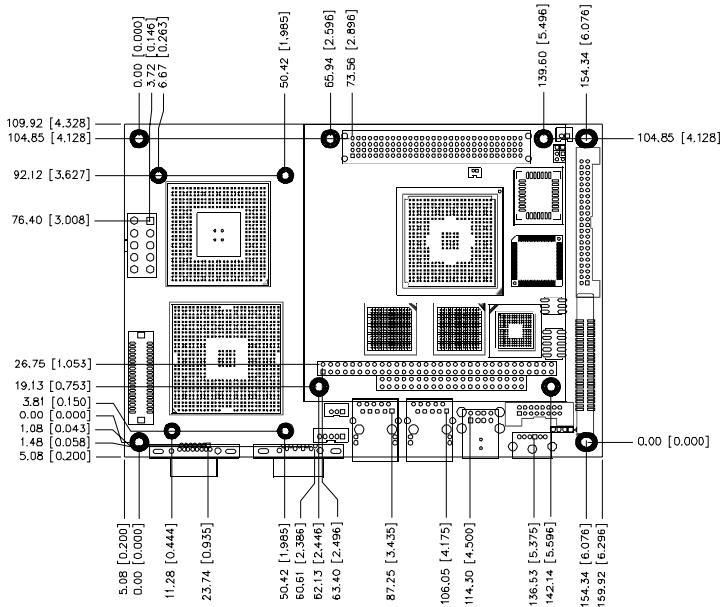


*Figure 1.1: Board layout: Dimensions (Component Side)*
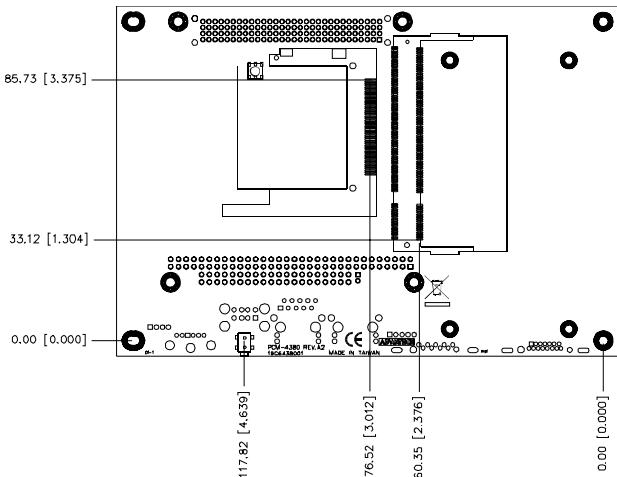


*Figure 1.2: Board layout: Dimensions (Solder Side)*

# Installation

This chapter explains the setup procedures of the PCM-4386 hardware, including instructions on setting jumpers and connecting peripherals, switches and indicators. Be sure to read all safety precautions before you begin the installation procedure.

# Chapter 2  Installation

## 2.1  Jumpers

The PCM-4386 has a number of jumpers that allow you to configure your system to suit your application. The table below lists the functions of the various jumpers.

### 2.1.1  Jumper Location

| Table 2.1: Jumpers | |
|---|---|
| **Label** | **Function** |
| J1 | AT/ATX Power Select |
| J2 | LCD Power |
| J3 | COM2 Setting |
| J4 | PCI VIO Setting |

### 2.1.2  Jumper Settings

| Table 2.2: At/ATX Power Select (J1) | |
|---|---|
| **Setting** | **Function** |
| 1-2 | AT Power Mode |
| None | ATX Power Mode |

*Note: In ATX mode, please use the ATX power cable (PN: 1700002055: 20P/10P EPIC ATX POWER Cable 10CM) in the bundle package to connect the power supply.*

*In AT mode, please use the AT power cable (PN:1700003931: 2\*4P/10P EPIC AT POWER 15 cm) in the bundle package to connect the power supply.*

*There are two 4 pin connectors on the AT power cable.*

*It's okay to connect a "single big 4P" connector under AT mode.*

*The maximum current (5 V, 12 V) through this "single big 4P".*

| Table 2.3: LCD Power (J2) | |
|---|---|
| **Setting** | **Function** |
| 1-2 | +5 V |
| 2-3 | +3.3 V |

| Table 2.4: COM2 Setting (J3) | |
| --- | --- |
| **Setting** | **Function** |
| (1-2) | RS232 |
| (3-4) | RS485 |
| (5-6) | RS422 |

| Table 2.5: PCI-VIO Setting (J4) | |
| --- | --- |
| **Setting** | **Function** |
| 1-2 | +5 V |
| 2-3 | +3.3 V |

***Warning!*** *To avoid damaging the computer, always turn off the power supply before setting "Clear CMOS." Before turning on the power supply, set the jumper back to "3.0 V Battery On."*

This jumper is used to erase CMOS data and reset system BIOS information.

The procedure for clearing CMOS is:

1.  Turn off the system.
2.  Push clear CMOS button and wait for 4 second.
3.  Turn on the system. The BIOS is now reset to its default setting

| Table 2.6: CMOS Clear (S2) | |
| --- | --- |
| **Condition** | **Result** |
| unpressed* | Normal |
| pushed | Clear CMOS |

\* default setting

## 2.2 Connectors

On-board connectors link the PCM-4386 to external devices such as hard disk drives, a keyboard, or floppy drives. The table below lists the function of each of the board's connectors.

| Table 2.7: Connectors | |
|---|---|
| **Label** | **Function** |
| CN1 | Power Con. |
| CN3 | DDR-SODIMM(RVS)-5.2 mm |
| CN4 | Battery Con. |
| CN5 | System FAN |
| CN6 | Power Switch (PS: only work with ATX power) |
| CN7 | GPIO |
| CN8 | LAN1 (RJ45) |
| CN9 | LAN2 (RJ45) |
| CN11 | Compact II W/O Ejector |
| CN13 | HD & Power LED |
| CN14 | LVDS Connector |
| CN15 | Inverter Power |
| CN16 | VGA Connector |
| CN18 | USB0/1 |
| CN19 | KB_MS |
| CN21 | COM1 |
| CN24 | ISA_-5V |
| CN26 | RS-422/485 |
| CN27 | IDE0 |
| CN28 | MIO-USB (USB-DOC) |
| CN30 | COM2/3/4 & LPT |
| CN31 | USB2/3 & AC97 (AUDIO I/F) |

## 2.3 Locating Connectors
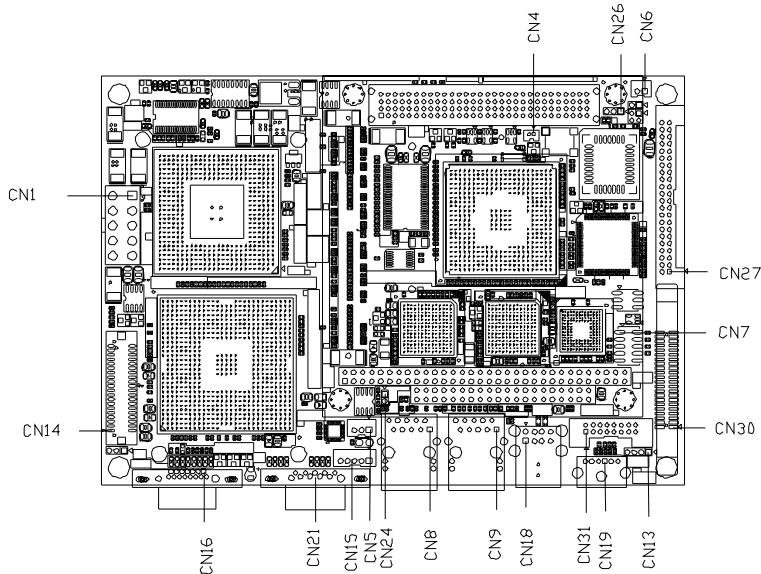


*Figure 2.1: Connectors (component side)*
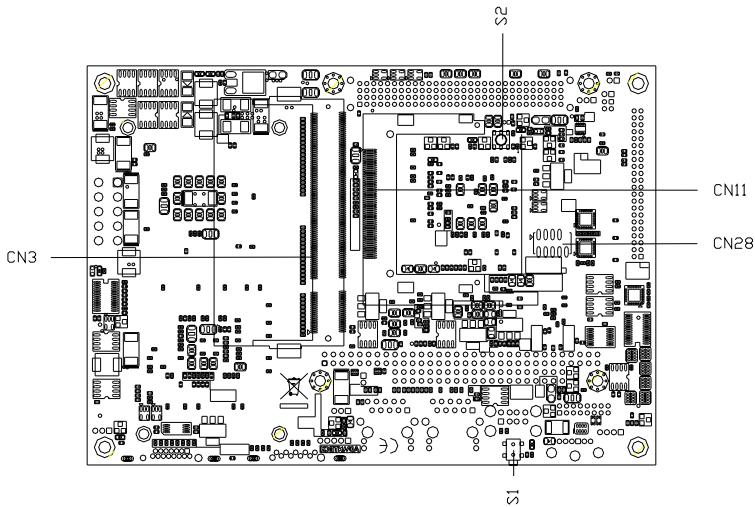


*Figure 2.2: Connectors (solder side)*

## 2.4 Setting Jumpers

You may configure your card to match the needs of your application by setting jumpers. A jumper is a metal bridge used to close an electric circuit. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To "close" a jumper, you connect the pins with the clip. To "open" a jumper, you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2, or 2 and 3.
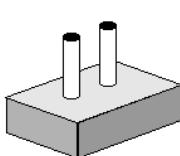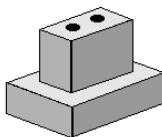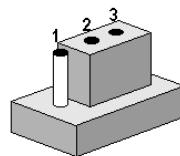


**open**            **closed**            **closed 2-3**

The jumper settings are schematically depicted in this manual as follows.
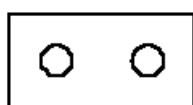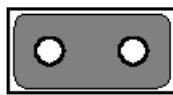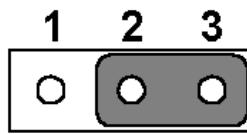


**open**            **closed**            **closed 2-3**

A pair of needle-nose pliers may be helpful when working with jumpers. If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

Generally, you simply need a standard cable to make most connections.

## 2.5 Installing SO-DIMM
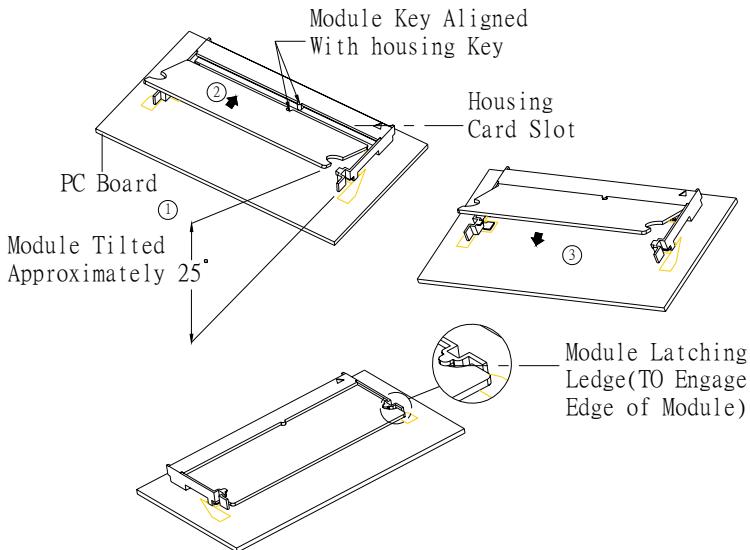


The procedures for installing SODIMMs are described below. Please follow these steps carefully. You can install SDRAM memory modules using 200-pin SODIMMs (Small Outline Dual In-line Memory Modules).

1. Ensure that all power supplies to the system are switched off.
2. Tilt the SODIMM card approximately 25° above the board, and move it in the direction of the housing card slot. Make sure that the key in the module and the key in the housing are aligned.
3. Push the module into the socket until the module bottoms. There should be a slight insertion force to engage the module into the contacts.

## 2.6 IDE, CDROM Hard Drive Connector (CN27)

The board provides 1 IDE channel to which you can attach up to two Enhanced Integrated Device Electronics hard disk drives or CDROM to the board's internal controller. Its IDE controller uses a PCI interface. This advanced IDE controller supports faster data transfer, PIO mode 3, mode 4 and up to UDMA/33.

### 2.6.1 Connecting the Hard Drive

Connecting drives is done in a daisy-chain fashion. This package includes One 44PIN IDE cable that can connect to 1.8" and 2.5" drives.

1.  Connect one end of the cable to Hard Drive connector. Make sure that the red (or blue) wire corresponds to pin 1 on the connector, which is labeled on the board (on the right side).
2.  Plug the other end of the cable into the Enhanced IDE hard drive, with pin 1 on the cable corresponding to pin 1 on the hard drive. (See your hard drive's documentation for the location of the connector.)

If desired, connect a second drive as described above.

Unlike floppy drives, IDE hard drives can connect to either end of the cable. If you install two drives, you will need to set one as the master and one as the slave by using jumpers on the drives. If you install only one drive, set it as the master.

## 2.7 Solid State Disk

The board provides a CompactFlash™ card type I/II socket.

### 2.7.1 CompactFlash (CN11)

The CompactFlash card shares a secondary IDE channel which can be enabled/disabled via the BIOS settings.

## 2.8 Parallel Port Connector (CN30)

Normally, the parallel port is used to connect the card to a printer. The board includes a multi-mode (ECP/EPP/SPP) parallel port accessed via CN30 and a 50-pin flat-cable connector. You will need an adapter cable if you use a traditional DB-25 connector. The adapter cable has a 50-pin connector on one end, and a DB-25 connector on the other.

The parallel port is designated as LPT1, and can be disabled in the system BIOS setup.

The parallel port interrupt channel is designated to be IRQ7.

You can select ECP/EPP DMA channel via BIOS setup.

## 2.9 Keyboard and PS/2 Mouse Connector (CN19)

The board provides a keyboard connector that supports both a keyboard and a PS/2 style mouse. In most cases, especially in embedded applications, a keyboard is not used. If the keyboard is not present, the standard PC/AT BIOS will report an error or fail during power-on self-test (POST) after a reset. The PCM-4386's BIOS standard setup menu allows you to select "All, But Keyboard" under the "Halt On" selection. This allows no-keyboard operation in embedded system applications, without the system halting under POST.

## 2.10 Power & HDD LED Connector (CN13)

Next, you may want to install external switches to monitor and control the board. These features are optional; install them only if you need them. The Power & HDD LED connector is a 4-pin Wafer box connector. It provides connections for a power and hard disk access indicator.

### 2.10.1 Power & HDD LED Connector(CN13)

The HDD LED indicator for hard disk access is an active low signal (24 mA sink rate). Power supply activity LED indicator.

### 2.10.2 Power Reset Button (S1)

Momentarily pressing the reset button will activate a reset. The switch is rated for 10 mA, 5 V.

## 2.11 Power Connectors (CN1)

### 2.11.1  Main Power Connector, +3.3V, +5 V, +12 V (CN1)

Supplies main power to the PCM-4386 (+5 V), and to devices that require +12 V.

### 2.11.2  System FAN (CN5)

## 2.12 Audio Interfaces (CN31)

### 2.12.1  Audio Connector (CN31)

The board provides all major audio signals and it can be optioned with Line-in/Line-out/Speaker-out functions with the PCM-410A-00A1E.

## 2.13 COM Port Connector (CN21,CN30)

The PCM-4386 provides 4 serial ports (COM1/3/4: RS-232; COM2: RS-232/422/485) in one DB-9 connector (COM1) and one 50-pin dual-inline, male header. It provides connections for serial devices (a mouse, etc.) or a communication network. You can find the pin assignments for the COM port connector in Appendix C.

### 2.13.1  COM2 RS-232/422/485 setting (J3)

COM2 can be configured to operate in RS-232, RS-422, or RS-485 mode. This is done via J3.

*Table 2.8: J3: COM2 RS-232/422/485 Select*

| Setting | Function |
| --- | --- |
| J3 (1-2)(open) | RS-232 |
| J3 (1-2)(open) | RS-422 |
| J3 (1-2)(open) | RS-485 |

## 2.14 VGA/LCD/LVDS Interface Connections

The board's PCI SVGA interface can drive conventional CRT displays and is capable of driving a wide range of flat panel displays, including passive LCD and active LCD displays. The board has two connectors to support these displays: one for standard CRT VGA monitors, one for flat panel displays, and one for LVDS type LCD panels.

### 2.14.1 CRT Display Connector (CN16)

The CRT display connector is a 15-pin D-SUB connector used for conventional CRT displays.

### 2.14.2 LVDS LCD Panel Connector (CN14)

The board supports 2 channel 36-bit LVDS LCD panel displays. Users can connect to an 36-bit LVDS LCD on it.

## 2.15 Ethernet Configuration

The board is equipped with 2 high performance 32-bit PCI-bus Ethernet interface which is fully compliant with IEEE 802.3U 10/100Mbps and IEEE 802.3 z/ab 1000BASE-T standards. It is supported by all major network operating systems.

### 2.15.1 100Base-T/1000Base-T connector (CN8, CN9)

100Base-T connections are made via the on-board RJ-45 connector

### 2.15.2 Network boot (Depends on Ethernet Controller Gigabit Ethernet only)

The Network Boot feature can be utilized by incorporating the Boot ROM image files for the appropriate network operating system. The Boot ROM BIOS files are included in the system BIOS, which is on the utility CD disc.

## 2.16 Watchdog Timer Configuration

An on-board watchdog timer reduces the chance of disruptions when the board is working improperly. This is an invaluable protective device for standalone or unmanned applications. Setup involves one jumper and running the control software (refer to Appendix A).

## 2.17 USB Connectors (CN31,CN18)

The board provides up to four USB (Universal Serial Bus) ports. This gives complete Plug and Play, and hot attach/detach for up to 127 external devices. The USB interfaces comply with USB specification Rev. 2.0 which supports 480Mbps transfer rate, and are fuse protected.

The USB interface is accessed through one 8 x 2-pin flat-cable connectors, CN31 (USB0, 1). You will need an adapter cable if you use a standard USB connector. The adapter cable has a 8 x 2-pin connector on one end and a USB connector on the other.

Also, There's one USB2.0 jack on CN18 for convenient connecting of a USB device.

The USB interfaces can be disabled in the system BIOS setup.

CN28 is USB2.0 with PIN HEADER 5*2P 180D(M) 2.0 mm interface (PCM-4386U series only).

## 2.18 GPIO (General Purpose Input Output) (CN7)

The board supports 8-bit GPIO through the GPIO connector. The 8 digital input/outputs can be programmed to read or control devices, with input or output defined. The default setting is 4 bits input and 4 bits output.

**Chipset Software
Installation Utility**

# Chapter 3    Chipset Software Installation Utility

## 3.1    Before you Begin

To facilitate the installation of the enhanced display device drivers and utility software, you should read the instructions in this chapter carefully before you attempt installation. The device drivers for the PCM-4386 board are located on the software installation CD. The auto-run function of the driver CD will guide and link you to the utilities and device drivers under a Windows system. The Intel® Chipset Software Installation Utility is not required on any systems running Windows 2000. Updates are provided via Service Packs from Microsoft*.

> *Note* *The files on the software installation CD are compressed. Do not attempt to install the drivers by copying the files manually. You must use the supplied SETUP program to install the drivers.*

Before you begin, it is important to note that most display drivers need to have the relevant software application already installed in the system prior to installing the enhanced display drivers. In addition, many of the installation procedures assume that you are familiar with both the relevant software applications and operating system commands. Review the relevant operating system commands and the pertinent sections of your application software's user manual before performing the installation.

## 3.2 Introduction

The Intel® Chipset Software Installation (CSI) utility installs to the target system the Windows INF files that outline to the operating system how the chipset components will be configured. This is needed for the proper functioning of the following features:

- Core PCI and ISA PnP services.
- USB 1.1 support (USB 2.0 driver needs to be installed separately)
- Identification of Intel® chipset components in the Device Manager.
- Integrates superior video features. These include filtered sealing of 720 pixel DVD content, and MPEG-2 motion compensation for software DVD

*Note      This utility is for Windows 2000 or XP, and it has to be installed before installing all other drivers.*

## 3.3 Installing the CSI Utility

1.  Insert the driver CD into your system's CD-ROM drive. In a few seconds, the CD main menu appears. Move to "\\PCM-4386\1_FIRST_INST". And click "INFINST_ENU" icon.
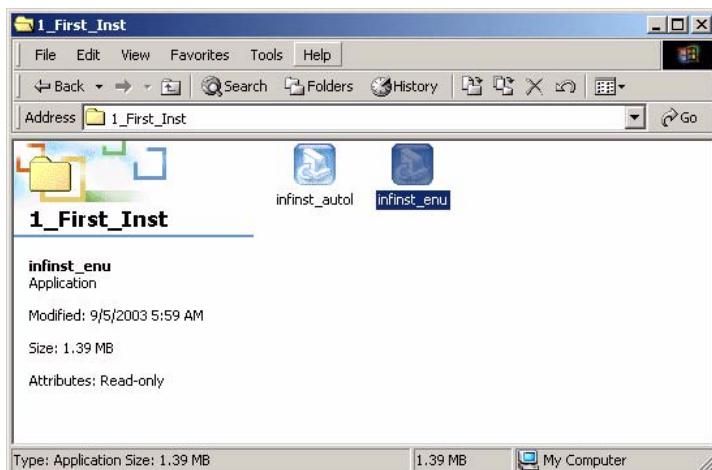
2. Click "Next" when you see the following message.



3. Click "Yes" when you see the following message.

4.    Click "Next" when you see the following message.
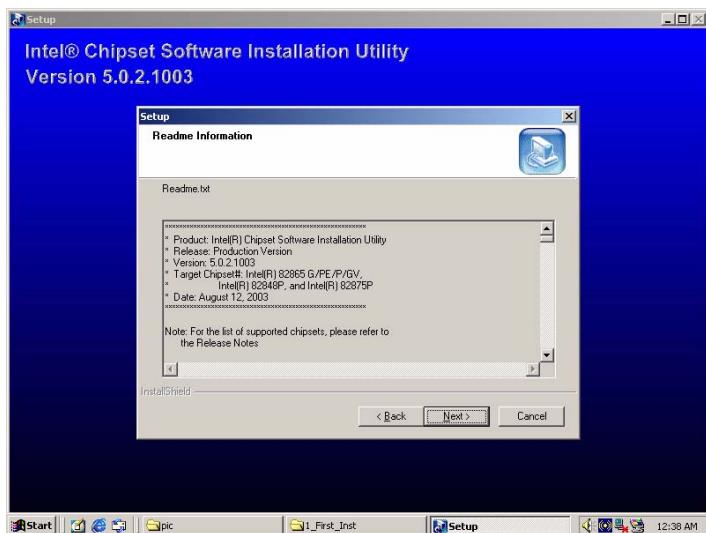


5.    When the following message appears, click "Finish" to complete the installation and restart Windows.

# Award BIOS Setup

# Chapter 4    Award BIOS Setup

## 4.1    Introduction

Award's BIOS ROM has a built-in setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed memory (CMOS RAM) so that it retains the setup information when the power is turned off.

### 4.1.1    CMOS RAM Auto-backup and Restore

The CMOS RAM is powered by an onboard button cell battery. When you finish BIOS setup, the data in CMOS RAM will be automatically backed up to Flash ROM. If operation in harsh industrial environments cause a soft error, BIOS will recheck the data in CMOS RAM and automatically restore the original data in Flash ROM to CMOS RAM for booting.

> *Note    If you intend to change the CMOS setting without restoring the previous backup, you have to click on "DEL" within two seconds of the "CMOS checksum error..." display screen message appearing. Then enter the "Setup" screen to modify the data. If the "CMOS checksum error..."message appears over and over, please check to see if you need to replace the battery in your system.*

## 4.2 Entering Setup

Turn on the computer and check for the "patch code". If there is a number assigned to the patch code, it means that the BIOS supports your CPU.

If there is no number assigned to the patch code, please contact an application engineer to obtain an up-to-date patch code file. This will ensure that your CPU's system status is valid. After ensuring that you have a number assigned to the patch code, pressing <Del> allows you to enter the setup.
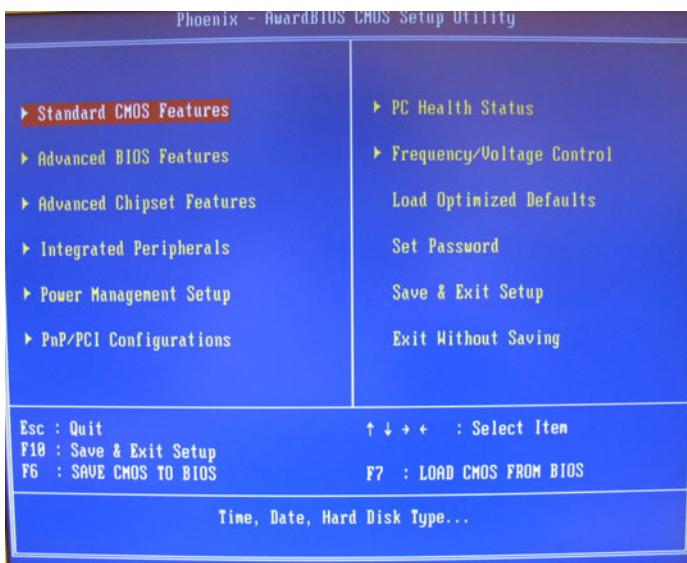


*Figure 4.1: Award BIOS Setup initial screen*

## 4.3 Standard CMOS Setup

Choose the "Standard CMOS Features" option from the "Initial Setup Screen" menu, and the screen below will be displayed. This menu allows users to configure system components such as date, time, hard disk drive, floppy drive, display, and memory.
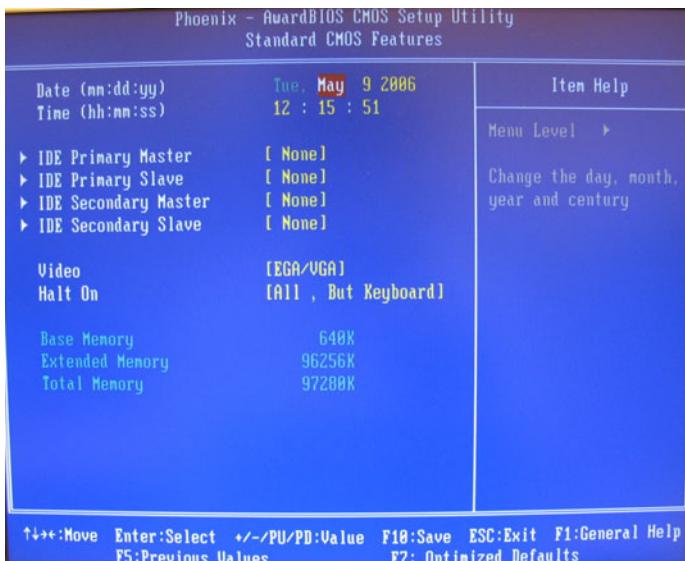


*Figure 4.2: Standard CMOS features screen*

## 4.4 Advanced BIOS Features

The "Advanced BIOS Features" screen appears when choosing the "Advanced BIOS Features" item from the "Initial Setup Screen" menu. It allows the user to configure the PCM-4386 according to his or her particular requirements. Below are some major items that are provided in the Advanced BIOS Features screen. A quick booting function is provided for your convenience. Simply enable the Quick Booting item to save yourself valuable time.
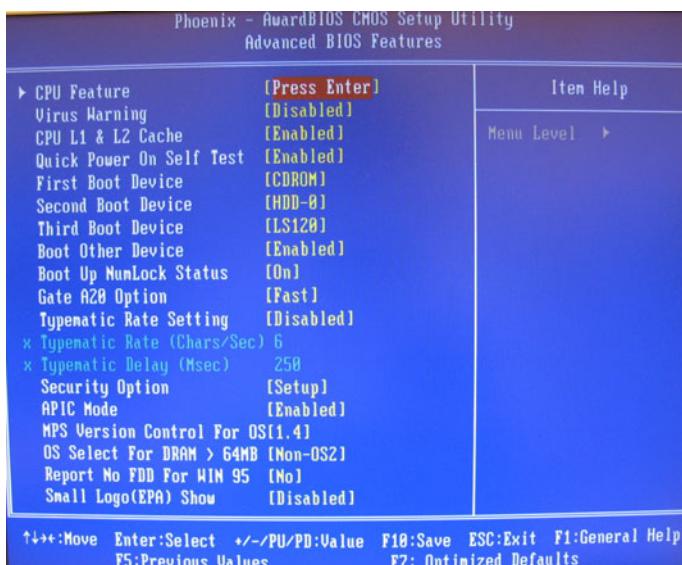


*Figure 4.3: Advanced BIOS features screen*

### 4.4.1 Virus Warning

If enabled, a warning message and alarm beep activates if someone attempts to write here. The commands are "Enabled" or "Disabled."

### 4.4.2 L1 & L2 Cache

Enabling this feature speeds up memory access. The commands are "Enabled" or "Disabled."

### 4.4.3 Quick Power On Self Test

This option speeds up the Power-On Self Test (POST) conducted as soon as the computer is turned on. When enabled, BIOS shortens or skips some of the items during the test. When disabled, the computer conducts normal POST procedures.

### 4.4.4 First/Second/Third/Other Boot Device

The BIOS tries to load the OS with the devices in the sequence selected. Choices are: "LS/ZIP", "HDD", "CDROM", "LAN", "Disabled".

### 4.4.5 Boot Up NumLock Status

This feature selects the "power on" state for NumLock. The commands are "Enabled" or "Disabled."

### 4.4.6 Gate A20 Option

- **Normal**: A pin in keyboard controller controls GateA20
- **Fast (Default)**: Chipset controls GateA20.

### 4.4.7 Typematic Rate Setting

The typematic rate is the rate key strokes repeat as determined by the keyboard controller. The commands are "Enabled" or "Disabled." Enabling allows the typematic rate and delay to be selected.

### 4.4.8 Typematic Rate (Chars/Sec)

BIOS accepts the following input values (characters/second) for typematic rate: 6, 8, 10, 12, 15, 20, 24, 30.

### 4.4.9 Typematic Delay (msec)

Typematic delay is the time interval between the appearance of two consecutive characters, when holding down a key. The input values for this category are: 250, 500, 750, 1000 (msec).

### 4.4.10  Security Option

This setting determines whether the system will boot up if the password is denied. Access to Setup is always limited.

- **System**: The system will not boot, and access to Setup will be denied if the correct password is not entered at the prompt.
- **Setup**: The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

> *Note*      *To disable security, select "PASSWORD SET-TING" in the main menu. At this point, you will be asked to enter a password. Simply press <Enter> to disable security. When security is disabled, the system will boot, and you can enter Setup freely.*

### 4.4.11  APIC Mode

This setting allows selecting an OS with greater than 64MB of RAM. Commands are "Non-OS2" or "OS2."

### 4.4.12  MPS Version Control For OS

This reports if an FDD is available for Windows 95. The commands are "Yes" or "No."

## 4.5  Integrated Peripherals

### 4.5.1  IDE Master/Slave PIO/UDMA Mode,

IDE Primary (Secondary) Master/Slave PIO/UDMA Mode (Auto) Each channel (Primary and Secondary) has both a master and a slave, making four IDE devices possible. Because each IDE device may have a different Mode timing (0, 1, 2, 3, 4), it is necessary for these to be independent. The default setting "Auto" will allow auto detection to ensure optimal performance.

### 4.5.2 On-Chip Secondary PCI IDE

If you enable IDE HDD Block Mode, the enhanced IDE driver will be enabled. Leave IDE HDD Block Mode on the default setting.
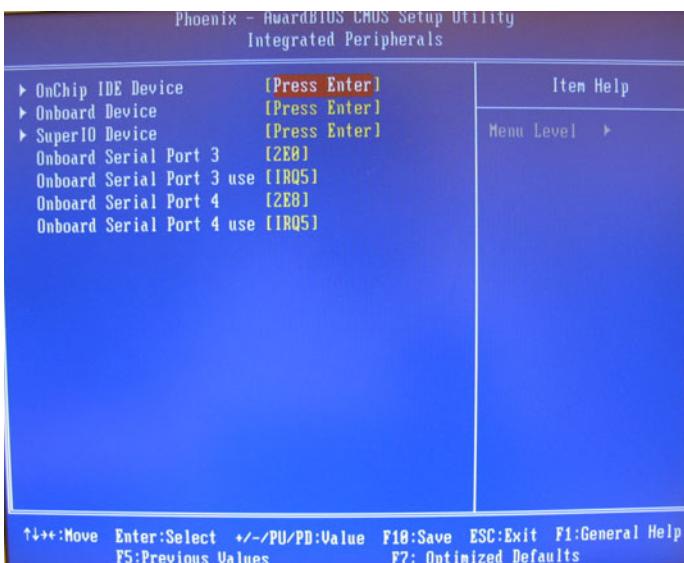


*Figure 4.4: Integrated peripherals*

### 4.5.3 USB Controller

Select "Enabled" if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals. The choices: "Enabled", "Disabled".

### 4.5.4 USB Keyboard/Mouse Support

Select "Enabled" if user plan to use an USB keyboard. The choices: "Enabled", "Disabled".

### 4.5.5 AC97 Audio

Select "Disable" if you do not want to use AC97 audio. Options are "Auto", "Disable".

### 4.5.6 Init Display First

This item allows you to choose which one to activate first, PCI Slot or onchip VGA. The choices: "PCI Slot", "Onboard".

### 4.5.7  IDE HDD Block Mode

You can enable the Primary IDE channel and/or the Secondary IDE channel. Any channel not enabled is disabled. This field is for systems with only SCSI drives.

### 4.5.8  Onboard Serial Port

For settings refer to the Appendix for the serial resource allocation, and select "Disabled" for the on-board serial connector.

### 4.5.9  Onboard Parallel Port

This field sets the address of the on-board parallel port connector. You can select either "3BCH/IRQ7", "378H/IRQ7", "278H/IRQ5" or "Disabled". If you install an I/O card with a parallel port, make sure there is no conflict in the address assignments. The CPU card can support up to three parallel ports, as long as there are no conflicts for each port.

### 4.5.10  Parallel Port Mode

This field allows you to set the operation mode of the parallel port. The setting "Normal" allows normal speed operation, but in one direction only. "EPP" allows bidirectional parallel port operation at maximum speed. "ECP" allows the parallel port to operate in bi-directional mode and at a speed faster than the maximum data transfer rate. "ECP + EPP" allows normal speed operation in a two-way mode.

### 4.5.11  EPP Mode Select

This field allows you to select EPP port type 1.7 or 1.9. The choices: "EPP1.7", "1.9".

### 4.5.12  ECP Mode Use DMA

This selection is available only if you select "ECP" or "ECP + EPP" in the Parallel Port Mode field. In ECP Mode Use DMA, you can select "DMA channel 1", "DMA channel 3", or "Disable". Leave this field at the default setting.

## 4.6  Power Management Setup

The power management setup controls the CPU card's "green" features to save power. The following screen shows the manufacturer's defaults:
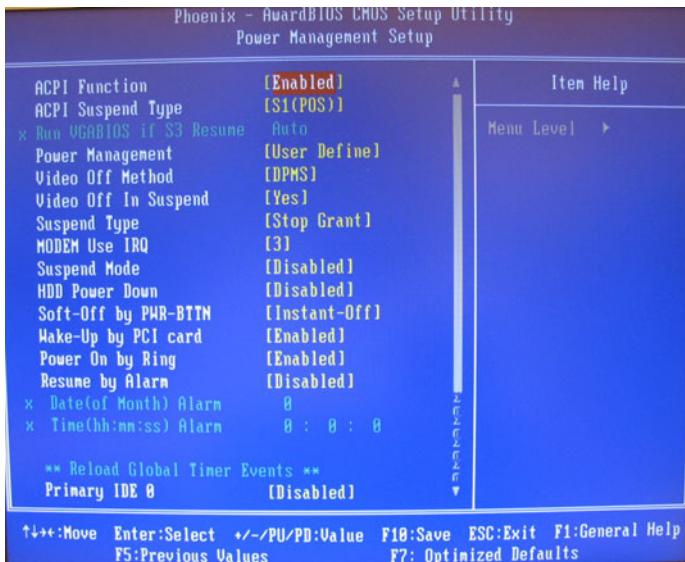


*Figure 4.5: Power management setup screen*

### 4.6.1  Power-Supply Type

ATX power supply

### 4.6.2  ACPI Function

The choices: "Enabled", "Disabled".

### 4.6.3 Power Management

This category allows you to select the type (or degree) of power saving and is directly related to the following modes:

1. HDD Power Down
2. Suspend Mode

There are four selections for Power Management, three of which have fixed mode settings.

| | |
|---|---|
| Min. Power Saving | Minimum power management., Suspend Mode = 1 hr., and HDD Power Down = 15 min. |
| Max. Power Saving | Maximum power management., Suspend Mode = 1 min., and HDD Power Down = 1 min. |
| User Defined (Default) | Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and disable. |

### 4.6.4 Video Off In Suspend

When system is in a suspend state, the video will turn off.

### 4.6.5 Modem Use IRQ

This determines the IRQ which the MODEM can use. The choices: 3, 4, 5, 7, 9, 10, 11, NA.

### 4.6.6 HDD Power Down

You can choose to turn the HDD off after one of the time intervals listed, or when the system is in "suspend" mode. If the HDD is in a power saving mode, any access to it will wake it up.

### 4.6.7 Soft-Off By PWR-BTTN

If you choose "Instant-Off", then pushing the ATX soft power switch button once will switch the system to "system off" power mode. You can choose "Delay 4 sec." If you do, then pushing the button for more than 4 seconds will turn off the system, whereas pushing the button momentarily (for less than 4 seconds) will switch the system to "suspend" mode.

### 4.6.8 PowerOn By LAN(GigaLAN option)

This item allows you to wake up the system via LAN from the remote-host. The choices: "Enabled", "Disabled".

### 4.6.9 PowerOn By Ring

When Enabled, an input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state. The choices: "Enabled", "Disabled".

### 4.6.10 PowerOn By Alarm

When Enabled, your can set the date and time at which the RTC (real-time clock) alarm awakens the system from Suspend mode. The choices: "Enabled", "Disabled".

### 4.6.11 Primary IDE 0 (1) and Secondary IDE 0 (1)

When Enabled, the system will resume from suspend mode if Primary IDE 0 (1) or Secondary IDE 0 (1) is active. The choices: "Enabled", "Disabled".

### 4.6.12 FDD, COM, LPT PORT

When Enabled, the system will resume from suspend mode if FDD, COMport, or LPT port is active. The choices: "Enabled", "Disabled".

### 4.6.13 PCI PIRQ [A-D]#

When Enabled, the system will resume from suspend mode if interrupt occurs. The choices: "Enabled", "Disabled".

## 4.7 PnP/PCI Configurations

### 4.7.1 PnP OS Installed

Select "Yes" if you are using a plug and play capable operating system. Select "No" if you need the BIOS to configure a non-boot device.
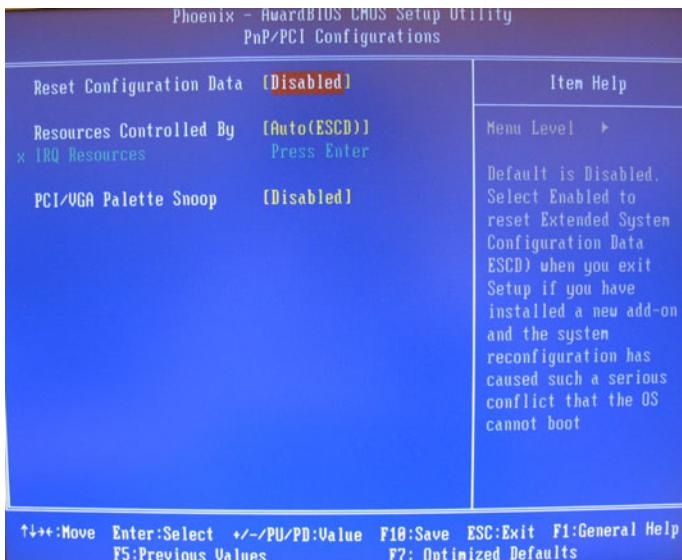


*Figure 4.6: PnP/PCI configurations screen*

### 4.7.2 Reset Configuration Data

Default is "Disable". Select "Enable" to reset Extended System Configuration Data (ESCD) if you have installed a new add-on and system reconfiguration has caused such a conflict that OS cannot boot.

### 4.7.3 Resources Controlled By

The commands here are "Auto" or "Manual." Choosing "Manual" requires you to choose resources from each following sub-menu. "Auto" automatically configures all of the boot and Plug and Play devices but you must be using Windows 95 or above.

### 4.7.4 PCI/VGA Palette Snoop

This is left at "Disabled."

## 4.8 Password Setting

To change the password:

1. Choose the "Set Password" option from the "Initial Setup Screen" menu and press <Enter>.
   The screen will display the following message:

   > Please Enter Your Password

2. Press <Enter>.
3. If the CMOS is good or if this option has been used to change the default password, the user is asked for the password stored in the CMOS.
   The screen will display the following message:

   > Please Confirm Your Password

4. Enter the current password and press <Enter>.
5. After pressing <Enter> (ROM password) or the current password (user-defined), you can change the password stored in the CMOS. The password must be no longer than eight (8) characters.

Remember, to enable the password setting feature, you must first select either "Setup" or "System" from the "Advanced BIOS Features" menu.

## 4.9 Save & Exit Setup

If you select this and press <Enter>, the values entered in the setup utilities will be recorded in the CMOS memory of the chipset. The microprocessor will check this every time you turn your system on and compare this to what it finds as it checks the system. This record is required for the system to operate.

## 4.10 Exit Without Saving

Selecting this option and pressing <Enter> lets you exit the setup program without recording any new values or changing old ones.

# PCI SVGA/LCD Setup

This chapter details the software configuration information. It shows you how to configure the card to match your application requirements.

# Chapter 5    PCI SVGA/LCD Setup

## 5.1    Introduction

The board has an onboard Intel 852GM chipset for its AGP/SVGA controller. It supports LVDS LCD displays and conventional analog CRT monitors with 64MB frame buffer shared with system memory. The VGA controller can drive CRT displays with resolutions up to 1600 x 1200 @ 85 Hz and 2048 x 536 @ 75 Hz and support 2 channel LVDS display modes up to UXGA panel resolution with a frequency range from 25 MHz to 112 MHz.

### 5.1.1    CMOS Setting For Panel Type

The PCM-4386 system BIOS and custom drivers are located in a 512 Kbyte, Flash ROM device, designated U29. A single Flash chip holds the system BIOS, VGA BIOS and network Boot ROM image. The display can be configured via CMOS settings. This method minimizes the number of chips and different types of LCD panels, please choose "panel type" from the "integrated peripherals" menu in CMOS setting.

### 5.1.2    Display Type

The PCM-4386 can be set in one of three configurations: on a CRT, on a flat panel display, or on both dual independent displays. The system is initially set to dual display mode. If you want to enable the CRT display only or the flat panel display only, please contact Intel Corporation or our sales representative for detailed information.

### 5.1.3    Dual Independent Display

The PCM-4386F uses an Intel 852GM controller that is capable of providing multiple views and simultaneous display with mixed video and graphics on a flat panel and CRT.

To set up dual display under Windows 2000/XP follow these steps:

1.    Select "Windows 2000", "Control panel", "Setting", "Advanced", "Graphics Properties" "Device".
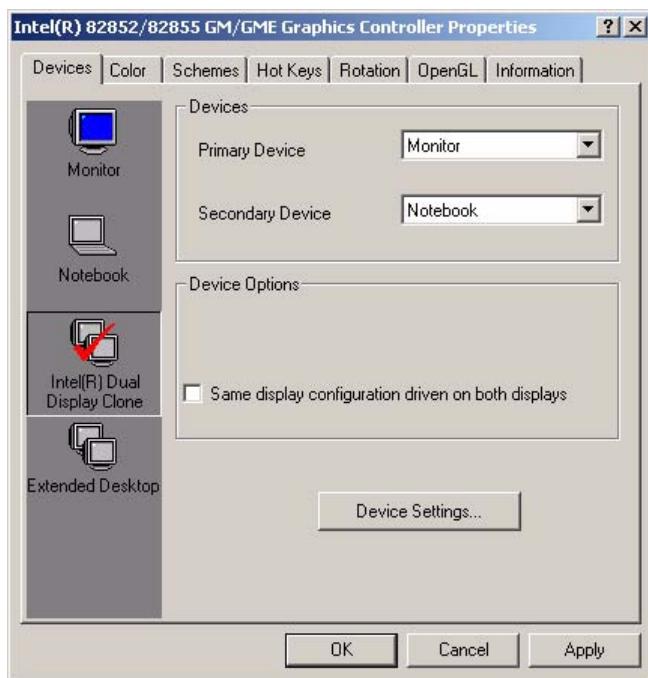
2.    Select "1" for current display, or "2" for second display.
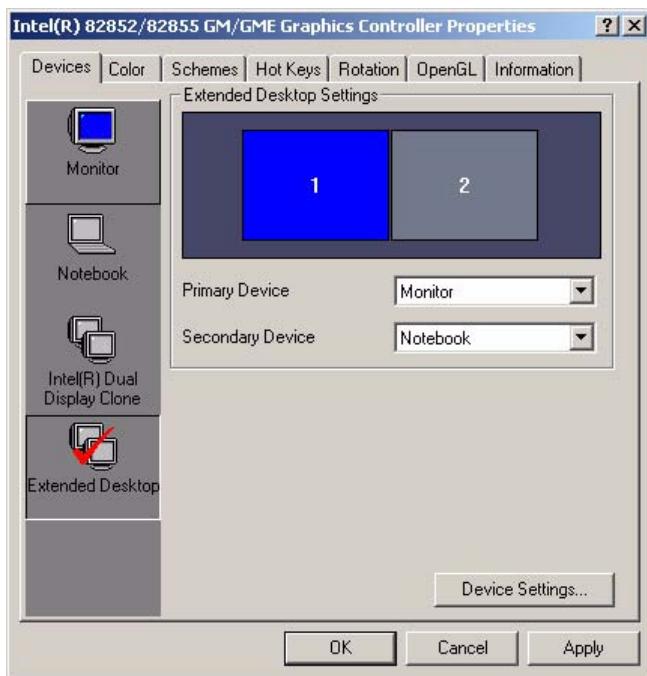


3.    Enable "Extend my Windows desktop onto this monitor".
4.    Click "OK".

## 5.2 Connections to Two Standard LCDs

The following tables illustrate typical LCD connection pinouts for the PCM-4386.

### 5.2.1 LG LM 150x06 (1024x768 LVDS LCD)

\* LCD connector type: HRS DF 19K-20P-1H or compatible

| Table 5.1: Connections to LCD/Flat Panel (CN1) | | | |
|---|---|---|---|
| **LCD Connector** | | **Flat Panel Connector** | |
| **Unipac-UB104S01** | | **DF-13 4OP** | |
| **Pin** | **Function** | **Pin** | **Function** |
| 1 | VCC | 1 | +5V |
| 2 | VCC | 2 | +5V |
| 3 | GND | 3 | GND |
| 4 | GND | 4 | GND |
| 5 | RxIN0- | 7 | LVDS_YAM0R |
| 6 | RxIN0+ | 9 | LVDS_YAP0R |
| 7 | GND | 11 | GND |
| 8 | RxIN1- | 13 | LVDS_YAM1R |
| 9 | RxIN1+ | 15 | LVDS_YAP1R |
| 10 | GND | 17 | GND |
| 11 | RxIN2- | 19 | LVDS_YAM2R |
| 12 | RxIN2+ | 21 | LVDS_YAP2R |
| 13 | GND | 23 | GND |
| 14 | CKIN- | 25 | LVDS_CLKAMR |
| 15 | CKIN+ | 27 | LVDS_CLKAPR |
| 16 | GND | 29 | GND |
| 17 | NC | | NC |
| 18 | NC | | NC |
| 19 | GND | 33 | GND |
| 20 | GND | 34 | GND |

## 5.2.2 AU M170EG01 (1024x768 LVDS LCD @ 36bit)

| *Table 5.2: Connections to AU M170EG01 (CN1)* | | | |
|---|---|---|---|
| **AU M170EG01** | | **PCM-4386 CN1** | |
| **Pin** | **Function** | **Pin** | **Function** |
| 1 | RxOIN0- | 7 | LVDS_YAM0 |
| 2 | RxOIN0+ | 9 | LVDS_YAP0 |
| 3 | RxOIN1- | 13 | LVDS_YAM1 |
| 4 | RxOIN1+ | 15 | LVDS_YAP1 |
| 5 | RxOIN2- | 19 | LVDS_YAM2 |
| 6 | RxOIN2+ | 21 | LVDS_YAP2 |
| 7 | VSS | 11 | GND |
| 8 | RxOCLKIN- | 25 | LVDS_CLKAM |
| 9 | RxOCLKIN+ | 27 | LVDS_CLKAP |
| 10 | RxOIN3- | 35 | LVDS_YAM3 |
| 11 | RxOIN3+ | 37 | LVDS_YAP3 |
| 12 | RxEIN0- | 8 | LVDS_YBM0 |
| 13 | RxEIN0+ | 10 | LVDS_YBP0 |
| 14 | VSS | 17 | GND |
| 15 | RxEIN1- | 14 | LVDS_YBM1 |
| 16 | RxEIN1+ | 16 | LVDS_YBP1 |
| 17 | VSS | 23 | GND |
| 18 | RxEIN2- | 20 | LVDS_YBM2 |
| 19 | RxEIN2+ | 22 | LVDS_YBP2 |
| 20 | RxECLKIN- | 26 | LVDS_CLKBM |
| 21 | RxECLKIN+ | 28 | LVDS_CLKBP |
| 22 | RxEIN3- | 36 | LVDS_YBM3 |
| 23 | RxEIN3+ | 38 | LVDS_YBP3 |
| 24 | VSS | 29 | GND |
| 25 | VSS | 30 | GND |
| 26 | NC | | NC |
| 27 | VSS | 33 | GND |
| 28 | VCC | 1 | LCD VDD (+5V) |
| 29 | VCC | 2 | LCD VDD (+5V) |
| 30 | VCC | | |

## 5.3 Installation of the SVGA Driver

Complete the following steps to install the SVGA driver. Follow the procedures in the flow chart that apply to the operating system that you are using within your PCM-4386.

> *Note*  *1. The Windows illustrations in this chapter are intended as examples only. Please follow the listed steps, and pay attention to the instructions which appear on your screen.*
>
> *2. For convenience, the CD-ROM drive is designated as "D" throughout this chapter.*

### 5.3.1 Installation of Windows 2000

1. Find the Win2000 VGA driver from the CD in the directory PCM-4386 CD, VGA\win2k_xp1332.
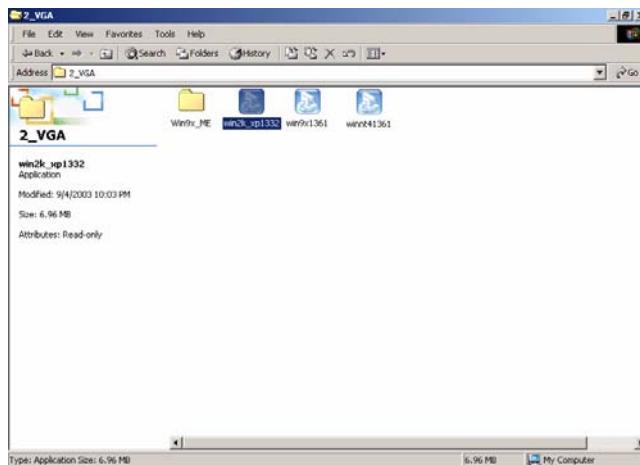
2. Double click "Setup" and "Next" in the setup wizard.



3. Click "Next" to install the Intel Extreme Graphics Driver.
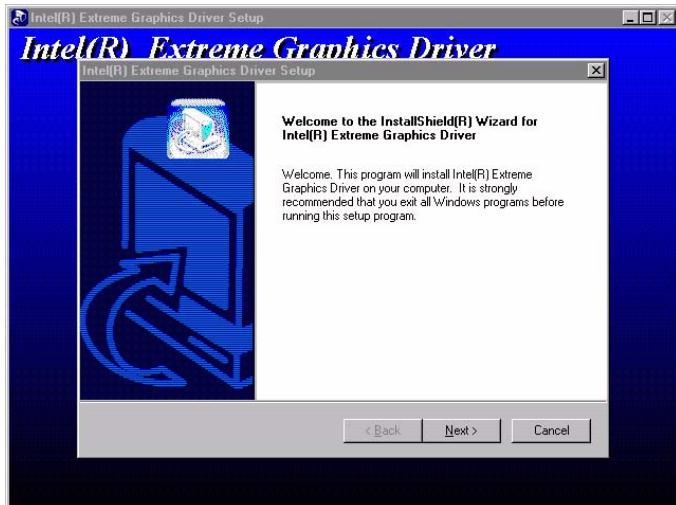
4. Click "Yes" to continue setup.
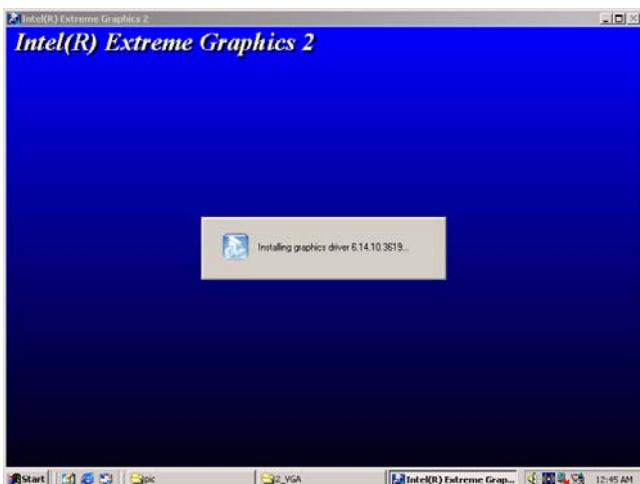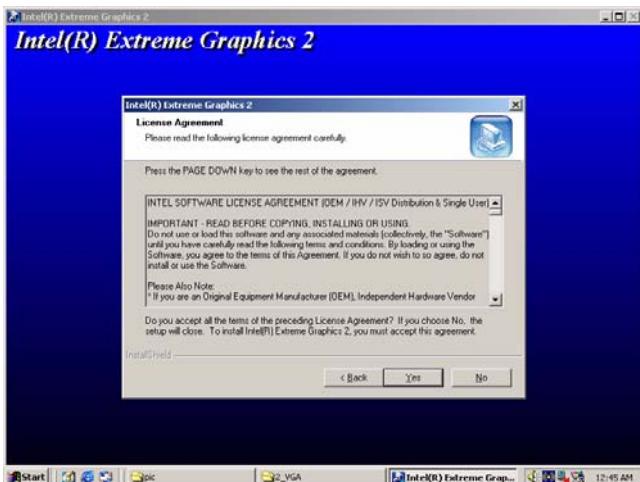
5. Restart computer when installation is finished.
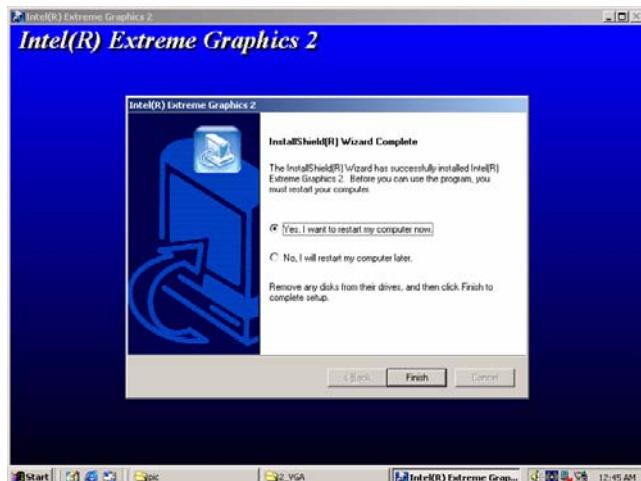


## 5.4 Further Information

For further information about the AGP/VGA installation of your PCM-4386, including driver updates, troubleshooting guides and FAQ lists, visit the following web resources:

Intel website: www.intel.com

# Audio Setup

The PCM-4386 is equipped with an audio interface that records and plays back CD-quality audio. This chapter provides instructions for installing the software drivers included on the audio driver diskettes.

# Chapter 6    Audio Setup

## 6.1    Introduction

The PCM-4386's audio interface provides high-quality stereo sound and
FM music synthesis (ESFM) by using the Intel ICH4 audio controller.
The audio interface can record, compress, and play back voice, sound,
and music with built-in mixer control and PCM-4386 daughterboard can
support this feature.

## 6.2    Driver installation

### 6.2.1    Before you Begin

Please read the instructions in this chapter carefully before you attempt
installation. The audio drivers for the PCM-4386 board are located on the
audio driver CD. Run the supplied SETUP program to install the drivers;
don't copy the files manually.

> *Note      The files on the software installation diskette are*
> *compressed. Do not attempt to install the drivers*
> *by copying the files manually. You must use the*
> *supplied SETUP program to install the drivers.*

## 6.2.2    Windows 98 Drivers

1.    Find the Win2000/XP Audio driver folder from the CD in the
directory PCM-4386 CD. Click "setup" to start the installation pro-
cess.
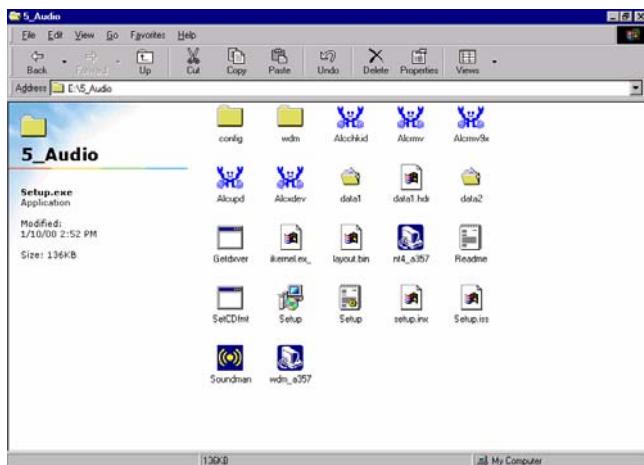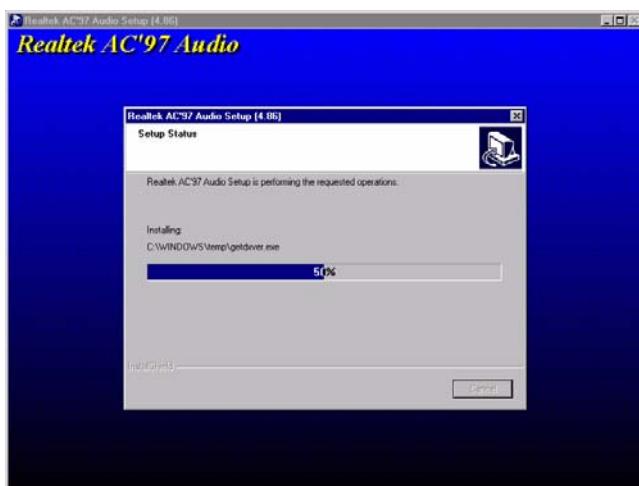
2.  Click "Yes" to reboot your computer.

# Ethernet Interface

This chapter provides information on Ethernet configuration.
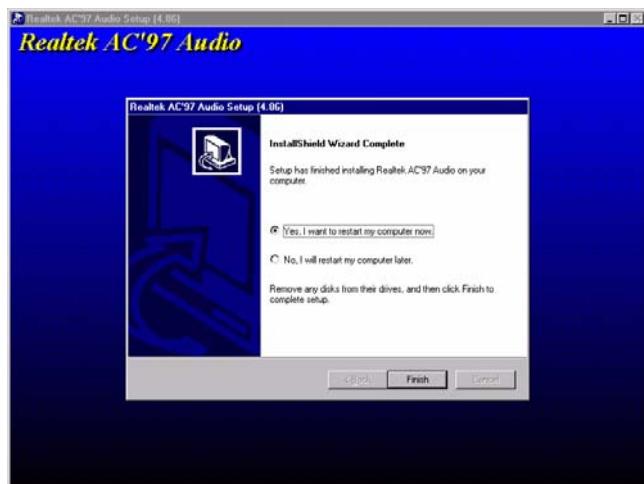
# Chapter 7    Ethernet Interface

## 7.1    Introduction

The PCM-4386 is equipped with a high performance 32-bit Ethernet chipset which is fully compliant with IEEE 802.3 100 Mbps CSMA/CD standards. It is supported by major network operating systems. It is also both 1000Base-T and 100Base-T compatible. The network boot feature can be utilized by incorporating the boot ROM image files for the appropriate network operating system. The boot ROM BIOS files are combined with system BIOS, which can be enabled/disabled in the BIOS setup.

## 7.2    Installation of Ethernet driver

Before installing the Ethernet driver, note the procedures below. You must know which operating system you are using on your PCM-4386 Series, and then refer to the corresponding installation flow chart. Then just follow the steps described in the flow chart. You will quickly and successfully complete the installation, even if you are not familiar with instructions for MS-DOS or Windows.

### 7.2.1    Installation for Windows 2000

1.    Select "Start", "Settings". "Control Panel".

*Note    The windows illustrations in this chapter are examples only. Follow the steps and pay attention to the instructions which appear on your screen.*

2.    Double click "Network".
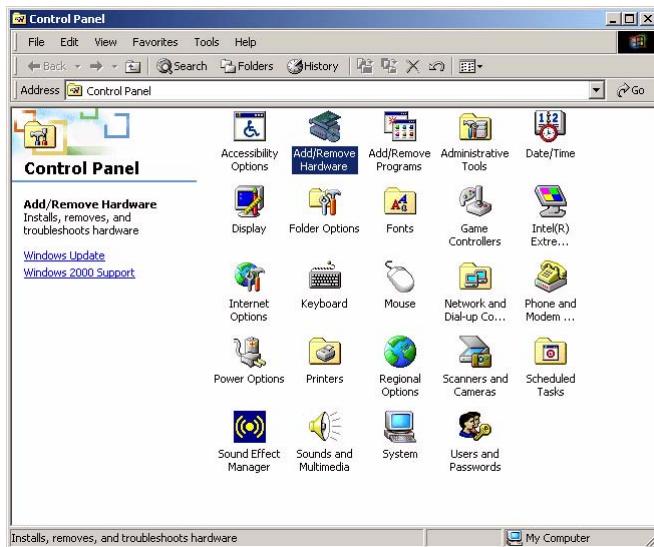
3.    Click "Next" at the "Add new hardware wizard" screen and prepare to install network functions.
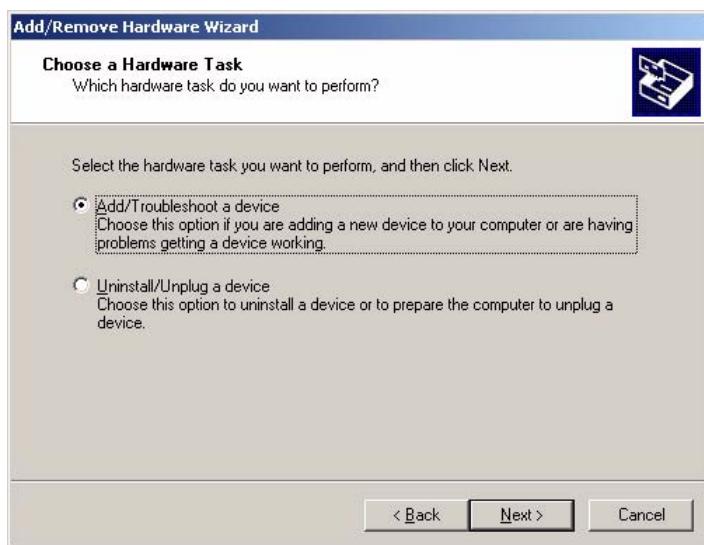
4.    Choose Hardware Device "Ethernet Controller". Click "Next".

**Add/Remove Hardware Wizard**

**Choose a Hardware Device**
Which hardware device do you want to troubleshoot?

The following hardware is already installed on your computer. If you are having problems with one of these devices, select the device, and then click Next.

If you are attempting to add a device and it is not shown below, select Add a new device, and then click Next.

Devices

    Add a new device
    Ethernet Controller
    ACPI Fixed Feature Button
    Intel(r) 82802 Firmware Hub Device
    Programmable interrupt controller
    System timer
    Direct memory access controller

[< Back]  [Next >]  [Cancel]

**Upgrade Device Driver Wizard**

**Install Hardware Device Drivers**
A device driver is a software program that enables a hardware device to work with an operating system.

This wizard upgrades drivers for the following hardware device:

    Ethernet Controller

Upgrading to a newer version of a device driver may add functionality to or improve the performance of this device.

What do you want the wizard to do?

    ○ Search for a suitable driver for my device (recommended)

    ● Display a list of the known drivers for this device so that I can choose a specific driver

[< Back]  [Next >]  [Cancel]

5.  Insert the CD into the D: drive.
6.  Fill in the PCM-4386 WIN2K folder from the CD ROM drive to find the LAN chipset directory.
7.  Click "OK".

8.  Choose the "Intel GD82559ER PCI Adapter" item.
9.  Click "Next".
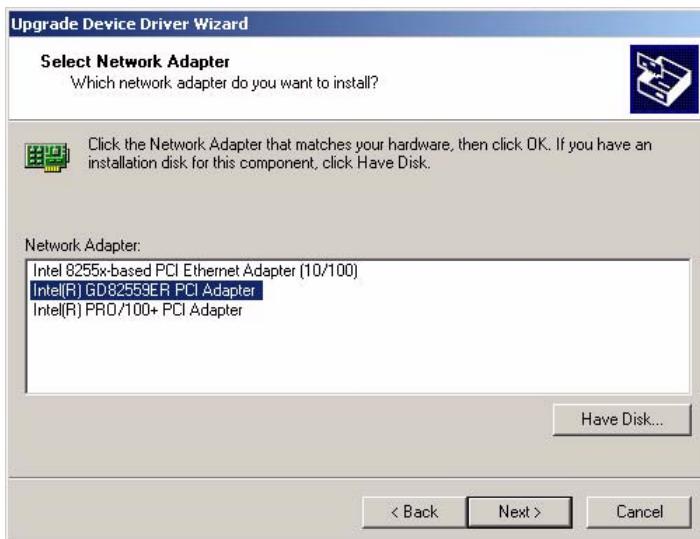




10. Make sure the items displayed on the configuration screen are set correctly.

11.  Click "Finish".



## 7.3  Further Information

Intel website:            www.intel.com

CHAPTER **8**

# Installing MIO Modules

This appendix gives instructions for installing MIO modules.

# Chapter 8    Installing MIO Modules

## 8.1    MIO Introduction

### 8.1.1    M2M Concept

Due to the many devices needed to connect to IP & Mobile networks,
A lot of research and development has been doneto fulfill the con-
cept of Machine to Machine or Machine to Mobile communication in
Industrial application fields.

### 8.1.2    Easy to Add Wireless Technology with your Embedded Motherboard

The MIO-series of products provide Wireless/Bluetooth/GSM/
GPRS modules through an onboard USB interface. Also, there are more
advanced applications like GPS, Zigbee, and RFID that will be intro-
duced in the near future.

### 8.1.3    The Best Board Combination for a System



*Figure 8.1: PCM-4386 + MIO 2320*

## 8.2 Optional Modules

### 8.2.1 MIO-2310 Wireless Module

•     Supports 802.11b/g
•     Data rates up to 54Mbps
•     RoHS compliance

### 8.2.2 MIO-2320 GSM/GPRS Module

•     Supports Quad-band: GSM 850/900/1800/1900MHz
•     Supports Multi-slot Class 12
•     RoHS compliance

# 8.3 MIO Drawings

Carry

SBC

Carry    SBC

Top

Bottom
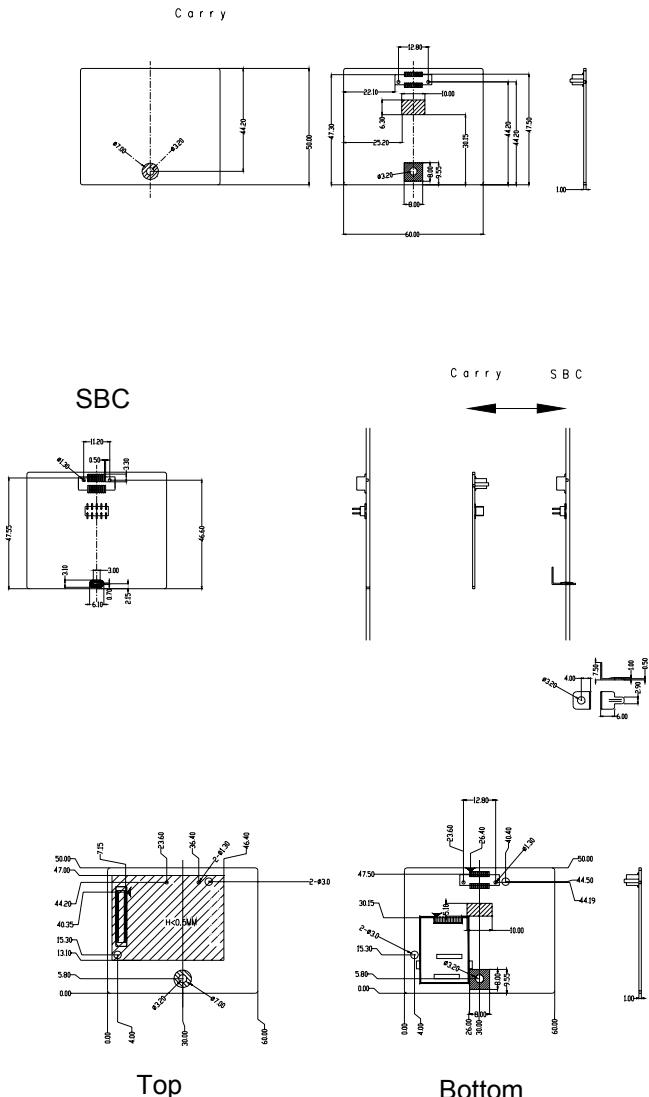
*Figure 8.2: MIO module mounting diagram*

# Pin Assignments

This appendix contains information of a detailed or specialized nature.

# Appendix A Pin Assignments

## A.1 Power connector (CN1)

```
  5   4   3   2   1
 ○   ○   ○   ○   □
 ○   ○   ○   ○   ○
 10  9   8   7   6
```
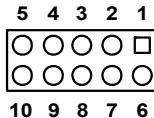
### Table A.1: ATX Power Connector (CN1)

**Part Number: 1655000042**

**Description:    WAFER 4.2 mm 10P 180D(M)**

| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1   | PS_ON    | IN          | +5 V         |
| 2   | GND      |             |              |
| 3   | GND      |             |              |
| 4   | VCC_12V  | PWR         | +12 V        |
| 5   | VCC3     | PWR         | +3.3 V       |
| 6   | VCC_SB   | PWR         | +5 V         |
| 7   | VCC      | PWR         | +5 V         |
| 8   | VCC      | PWR         | +5 V         |
| 9   | V-12V    | PWR         | -12 V        |
| 10  | GND      |             |              |

## A.2 Battery Connector (CN4)

```
 □   ○
 1   2
```

### Table A.2: Battery Connector (CN4)

**Part Number: 1655902032**

**Description:    WAFER 2P 180D(M) 1.25 mm**

| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1   | VBAT     | PWR         | +3.3 V       |
| 2   | GND      |             |              |

# A.3 System FAN (CN5)

```
 1   2   3
┌─────────┐
│ □   ○   ○ │
└─────────┘
```
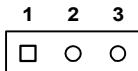
## Table A.3: System FAN (CN5

**Part Number: 1655303020**

**Description:    WAFER BOX 2.0 mm 3P 180D w/LOCK**

| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | FAN_IO | IN | +5 V |
| 2 | +12 V | PWR | +12 V |
| 3 | GND | | |

# A.4 Power Switch (CN6)

```
┌───────┐
│ □   ○ │
└───────┘
  1   2
```

## Table A.4: Power Switch (CN6)

**Part Number: 1655302020**

**Description:    WAFER BOX 2P 180D 2.0 mm MALE W/Lock**

| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | FP_PSIN | PWR | +3.3 V |
| 2 | GND | | |

# A.5 GPIO (CN7)

```
    2   4   6   8   10
   ┌─────────────────┐
   │ ○  ○  ○  ○  ○  │
   │ □  ○  ○  ○  ○  │
   └─────────────────┘
    1   3   5   7   9
```
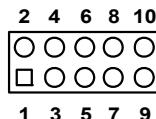
### Table A.5: GPIO (CN7)

**Part Number: 1653005261**

**Description:    PIN HEADER SMD 5*2P 180D(M) 2.0 mm**

| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | +5V | PWR | +5 V |
| 2 | GPIO4 | I/O | +5 V |
| 3 | GPIO0 | I/O | +5 V |
| 4 | GPIO5 | I/O | +5 V |
| 5 | GPIO1 | I/O | +5 V |
| 6 | GPIO6 | I/O | +5 V |
| 7 | GPIO2 | I/O | +5 V |
| 8 | GPIO7 | I/O | +5 V |
| 9 | GPIO3 | I/O | +5 V |
| 10 | GND | | |

## A.6 LAN1(RJ45) (CN8)



1      8
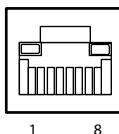
### *Table A.6: LAN1(RJ45+10/100 Jack) (CN8)*

**Part Number: 1652000174**

**Description:**    **PhoneJack RJ45 14P 90D(F) W/Xfam**

| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | LAN_TX+ | OUT | Analog |
| 2 | LAN_TX- | OUT | Analog |
| 3 | LAN_RX+ | OUT | Analog |
| 4 | LAN_MID0+ | I/O | Analog |
| 5 | LAN_MID0- | I/O | Analog |
| 6 | LAN_RX- | I/O | Analog |
| 7 | LAN_MID1+ | I/O | Analog |
| 8 | LAN_MID1- | I/O | Analog |

# A.7 LAN2(RJ45) (CN9)



1　　8
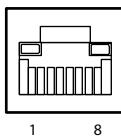
### *Table A.7: LAN2(RJ45+10/100 Jack) (CN9)*

**Part Number: 1652000174**

**Description:　PhoneJack RJ45 14P 90D(F) W/Xfam**

| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | LAN_TX+ | OUT | Analog |
| 2 | LAN_TX- | OUT | Analog |
| 3 | LAN_RX+ | OUT | Analog |
| 4 | LAN_MID0+ | I/O | Analog |
| 5 | LAN_MID0- | I/O | Analog |
| 6 | LAN_RX- | I/O | Analog |
| 7 | LAN_MID1+ | I/O | Analog |
| 8 | LAN_MID1- | I/O | Analog |

# A.8 Compact II without Ejector (CN11)

| Table A.8: Compact II W/Ejector (CN11) | | | |
|---|---|---|---|
| **Part Number: 1653025211** | | | |
| **Description:    HEADER 50P 90D(M) ANGLE Standard SMT for Compact II W/Ejector** | | | |
| **Pin** | **Pin Name** | **Signal Type** | **Signal Level** |
| 1 | GND | | |
| 2 | IDE1_D3 | I/O | +5 V |
| 3 | IDE1_D4 | I/O | +5 V |
| 4 | IDE1_D5 | I/O | +5 V |
| 5 | IDE1_D6 | I/O | +5 V |
| 6 | IDE1_D7 | I/O | +5 V |
| 7 | IDE1_CS#1 | OUT | +5 V |
| 8 | IDE1_A10 | OUT | +5 V |
| 9 | IDE1_OE# | OUT | +5 V |
| 10 | IDE1_A9 | OUT | +5 V |
| 11 | IDE1_A8 | OUT | +5 V |
| 12 | IDE1_A7 | OUT | +5 V |
| 13 | +5 V | PWR | +5 V |
| 14 | IDE1_A6 | IN | +5 V |
| 15 | IDE1_A5 | IN | +5 V |
| 16 | IDE1_A4 | IN | +5 V |
| 17 | IDE1_A3 | IN | +5 V |
| 18 | IDE1_A2 | IN | +5 V |
| 19 | IDE1_A1 | IN | +5 V |
| 20 | IDE1_A0 | IN | +5 V |
| 21 | IDE1_D0 | I/O | +5 V |
| 22 | IDE1_D1 | I/O | +5 V |
| 23 | IDE1_D2 | I/O | +5 V |
| 24 | IDE1_IOIS16# | IN | +5 V |
| 25 | CF_CD#2 | IN | +5 V |
| 26 | CF_CD#1 | IN | +5 V |
| 27 | IDE1_D11 | I/O | +5 V |
| 28 | IDE1_D12 | I/O | +5 V |
| 29 | IDE1_D13 | I/O | +5 V |
| 30 | IDE1_D14 | I/O | +5 V |

| Table A.8: Compact II W/Ejector (CN11) | | | |
|---|---|---|---|
| 31 | IDE1_D15 | I/O | +5 V |
| 32 | IDE1_CS#3 | OUT | +5 V |
| 33 | NC | | |
| 34 | IDE1_IOR# | OUT | +5 V |
| 35 | IDE1_IOW# | OUT | +5 V |
| 36 | IDE1_WE# | OUT | +5 V |
| 37 | IDE1_IRQ15 | IN | +5 V |
| 38 | +5 V | PWR | +5 V |
| 39 | CF_CSEL# | OUT | +5 V |
| 40 | NC | | |
| 41 | IDE1_RST# | OUT | +5 V |
| 42 | IDE1_IORDY | OUT | +5 V |
| 43 | IDE1_DREQ | OUT | +5 V |
| 44 | IDE1_DACK# | OUT | +5 V |
| 45 | CF_ASP# | I/O | +5 V |
| 46 | CF_S66DET# | IN | +5 V |
| 47 | IDE1_D8 | I/O | +5 V |
| 48 | IDE1_D9 | I/O | +5 V |
| 49 | IDE1_D10 | I/O | +5 V |
| 50 | GND | | |

## A.9 HD & Power LED (CN13)
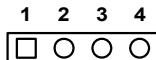


| Table A.9: HD & Power LED (CN13) | | | |
|---|---|---|---|
| **Part Number: 1653004101** | | | |
| **Description: PIN HEADER 4*1P 180D(M) 2.0 mm** | | | |
| **Pin** | **Pin Name** | **Signal Type** | **Signal Level** |
| 1 | +5 V | PWR | +5 V |
| 2 | GND | | |
| 3 | +5 V | PWR | +5 V |
| 4 | HD_LED | OUT | +5 V |

# A.10 LVDS Connector (CN14)
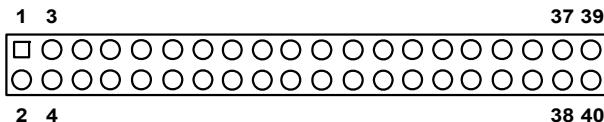


## Table A.10: LVDS Connector (CN14)

**Part Number: 1653920200**

**Description:    *CONN. 40P 90D 1.25mm SMD WO/Pb DF13-40DP-1.25 V**

| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | +5 V/+3.3 V | PWR | +5 V/+3.3 V |
| 2 | +5 V/+3.3 V | PWR | +5 V/+3.3 V |
| 3 | GND | | |
| 4 | GND | | |
| 5 | +5 V/+3.3 V | PWR | +5 V/+3.3 V |
| 6 | +5 V/+3.3 V | PWR | +5 V/+3.3 V |
| 7 | LVDS0_D0- | OUT | LVDS |
| 8 | LVDS1_D0- | OUT | LVDS |
| 9 | LVDS0_D0+ | OUT | LVDS |
| 10 | LVDS1_D0+ | OUT | LVDS |
| 11 | GND | | |
| 12 | GND | | |
| 13 | LVDS0_D1- | OUT | LVDS |
| 14 | LVDS1_D1- | OUT | LVDS |
| 15 | LVDS0_D1+ | OUT | LVDS |
| 16 | LVDS1_D1+ | OUT | LVDS |
| 17 | GND | | |
| 18 | GND | | |
| 19 | LVDS0_D2- | OUT | LVDS |
| 20 | LVDS1_D2- | OUT | LVDS |
| 21 | LVDS0_D2+ | OUT | LVDS |
| 22 | LVDS1_D2+ | OUT | LVDS |
| 23 | GND | | |
| 24 | GND | | |
| 25 | LVDS0_CLK- | OUT | LVDS |
| 26 | LVDS1_CLK- | OUT | LVDS |

| Table A.10: LVDS Connector (CN14) | | | |
|---|---|---|---|
| 27 | LVDS0_CLK+ | OUT | LVDS |
| 28 | LVDS1_CLK+ | OUT | LVDS |
| 29 | GND | | |
| 30 | GND | | |
| 31 | LVDS0_SC_DDC | I/O | +3 V/+5 V |
| 32 | LVDS0_SD_DDC | I/O | +3 V/+5 V |
| 33 | GND | | |
| 34 | GND | | |
| 35 | LVDS0_D3- | OUT | LVDS |
| 36 | LVDS1_D3- | OUT | LVDS |
| 37 | LVDS0_D3+ | OUT | LVDS |
| 38 | LVDS1_D3+ | OUT | LVDS |
| 39 | NC | | |
| 40 | LVDS0_VCON | OUT | 0.3 V |

## A.11 Inverter Power (CN15)
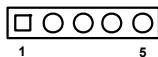


| Table A.11: Inverter Power (CN15) | | | |
|---|---|---|---|
| Part Number: 1655305020 | | | |
| Description: WAFER BOX 2.0 mm 5P 180D MALE W/LOCK | | | |
| **Pin** | **Pin Name** | **Signal Type** | **Signal Level** |
| 1 | LVDS0_V12 | PWR | +12 V |
| 2 | GND | | |
| 3 | LVDS0_ENABKL | OUT | +5 V |
| 4 | LVDS0_VBR | OUT | +5 V |
| 5 | LVDS0_V5 | PWR | +5 V |

## A.12 USB0/1 (CN18)

| Table A.12: USB0/1 (CN18) | | | |
|---|---|---|---|
| **Part Number: 1654908100** | | | |
| **Description:    USB Conn. DUAL port 8 pin90D(M)** | | | |
| **Pin** | **Pin Name** | **Signal Type** | **Signal Level** |
| 1 | +5 V | PWR | +5 V |
| 2 | USB0_P- | I/O | |
| 3 | USB0_P+ | I/O | |
| 4 | GND | | |
| 5 | +5 V | PWR | +5 V |
| 6 | USB1_P- | I/O | |
| 7 | USB1_P+ | I/O | |
| 8 | GND | | |
| 9 | GND | | |
| 10 | GND | | |
| 11 | GND | | |
| 12 | GND | | |

# A.13 Keyboard/Mouse (CN19)
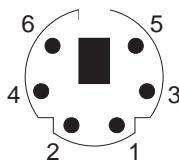


## Table A.13: KB_MS1 (CN19)

**Part Number: 1654606203**

**Description:   MINIDIN 6P 90D(F) D Short body W/Shielding)**

| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | KB_DAT | I/O | +5 V |
| 2 | MS_DAT | I/O | +5 V |
| 3 | GND | | |
| 4 | +5 V | PWR | +5 V |
| 5 | KB_CLK | I/O | +5 V |
| 6 | MS_CLK | I/O | +5 V |

# A.14 COM1 (CN21)
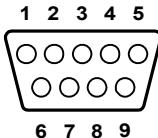


## Table A.14: COM1 (CN21)

**Part Number: 1654000056**

**Description:   D-SUB CON. 9P 90D(M)**

| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | DCD# | IN | +5 V |
| 2 | RXD# | IN | +5 V |
| 3 | TXD# | OUT | +5 V |
| 4 | DTR# | I/O | +5 V |
| 5 | GND | | |
| 6 | DSR# | IN | +5 V |

| Table A.14: COM1 (CN21) | | | |
|------|------|------|--------|
| 7 | RTS# | I/O | +5 V |
| 8 | CTS# | IN | +5 V |
| 9 | RI# | IN | +5 V |
| 10 | NC | | |
| 11 | NC | | |
| 12 | GND | | |
| 13 | GND | | |
| 14 | GND | | |
| 15 | GND | | |
| 16 | GND | | |
| 17 | GND | | |
| 18 | GND | | |
| 19 | GND | | |
| 20 | GND | | |
| 21 | GND | | |

## A.15 ISA_-5V (CN24)

| Table A.15: ISA_-5V (CN24) | | | |
|------|------|------|------|
| Part Number: 1653002101 | | | |
| Description:   PIN HEADER 2*1P 180D(M)SQUARE 2.0 mm | | | |
| **Pin** | **Pin Name** | **Signal Type** | **Signal Level** |
| 1 | -5 V | PWR | -5 V |
| 2 | GND | | |

# A.16 RS-422/485 (CN26)

| Table A.16: RS-422/485 (CN26) | | | |
|---|---|---|---|
| **Part Number: 1653002201** | | | |
| **Description:   PIN HEADER 2*2P 180D(M) 2.0 mm** | | | |
| **Pin** | **Pin Name** | **Signal Type** | **Signal Level** |
| 1 | TXD485- | OUT | +5 V |
| 2 | TXD485+ | OUT | +5 V |
| 3 | RXD485- | IN | +5 V |
| 4 | RXD485+ | IN | +5 V |

# A.17 IDE0 (CN27)

```
  1  3                                          41 43
 ┌─────────────────────────────────────────────┐
 │ □ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ │
 │ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ │
 └─────────────────────────────────────────────┘
  2  4                                          42 44
```
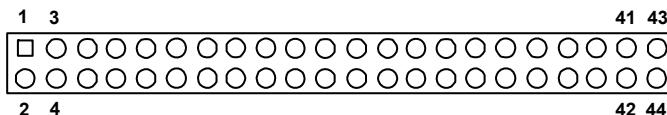
## Table A.17: IDE0 (CN27)

**Part Number: 1653000263**

**Description:    BOX Header 2*22P 180D(M)2.0 mm DIP W/Lock**

| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | IDE0_RST# | OUT | +5 V |
| 2 | GND | | |
| 3 | IDE0_D7 | I/O | +5 V |
| 4 | IDE0_D8 | I/O | +5 V |
| 5 | IDE0_D6 | I/O | +5 V |
| 6 | IDE0_D9 | I/O | +5 V |
| 7 | IDE0_D5 | I/O | +5 V |
| 8 | IDE0_D10 | I/O | +5 V |
| 9 | IDE0_D4 | I/O | +5 V |
| 10 | IDE0_D11 | I/O | +5 V |
| 11 | IDE0_D3 | I/O | +5 V |
| 12 | IDE0_D12 | I/O | +5 V |
| 13 | IDE0_D2 | I/O | +5 V |
| 14 | IDE0_D13 | I/O | +5 V |
| 15 | IDE0_D1 | I/O | +5 V |
| 16 | IDE0_D14 | I/O | +5 V |
| 17 | IDE0_D0 | I/O | +5 V |
| 18 | IDE0_D15 | I/O | +5 V |
| 19 | GND | | |
| 21 | IDE0_DREQ | OUT | +5 V |
| 22 | GND | | |
| 23 | IDE0_IOW | OUT | +5 V |
| 24 | GND | | |
| 25 | IDE0_IOR | OUT | +5 V |
| 26 | GND | | |
| 27 | IDE0_IORDY | OUT | +5 V |
| 28 | IDE0_CSEL | I/O | +5 V |

| Table A.17: IDE0 (CN27) | | | |
|---|---|---|---|
| 29 | IDE0_DACK# | OUT | +5 V |
| 30 | GND | | |
| 31 | IDE0_IRQ14 | IN | +5 V |
| 32 | IDE0_IOIS16# | IN | +5 V |
| 33 | IDE0_A1 | IN | +5 V |
| 34 | IDE0_D66DET# | IN | +5 V |
| 35 | IDE0_A0 | IN | +5 V |
| 36 | IDE0_A2 | IN | +5 V |
| 37 | IDE0_CS#0 | OUT | +5 V |
| 38 | IDE0_CS#1 | OUT | +5 V |
| 39 | IDE0_ASP# | OUT | +5 V |
| 40 | GND | | |
| 41 | +5 V | PWR | +5 V |
| 42 | +5 V | PWR | +5 V |
| 43 | GND | | |
| 44 | N/A | | |

## A.18 MIO-USB (CN28)

| Table A.18: MIO-USB (CN28) | | | |
|---|---|---|---|
| Part Number: 1653000248 | | | |
| Description: PIN HEADER 5*2P 180D(M) 2.0 mm H=3.3 MIO-USB | | | |
| Pin | Pin Name | Signal Type | Signal Level |
| 1 | +5 V | PWR | +5 V |
| 2 | +5 V | PWR | +5 V |
| 3 | USB4_P- | I/O | |
| 4 | USB5_P- | I/O | |
| 5 | USB4_P+ | I/O | |
| 6 | USB5_P+ | I/O | |
| 7 | GND | | |
| 8 | GND | | |
| 9 | N/A | | |
| 10 | N/A | | |

## A.19 COM2/3/4 & LPT (CN30)

```
  1   3                                              47  49
 ┌─────────────────────────────────────────────────────┐
 │ □ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ │
 │ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ │
 └─────────────────────────────────────────────────────┘
  2   4                                              48  50
```
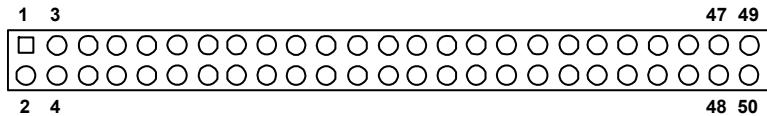
### Table A.19: COM2/3/4 & LPT (CN30)

**Part Number: 1653000320**

**Description:    BOX HEADER 25*2P 180D(M) 1.27 mm**

| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | COM2_DCD# | IN | +5 V |
| 2 | COM2_DSR# | IN | +5 V |
| 3 | COM2_RXD | IN | +5 V |
| 4 | COM2_RTS# | I/O | +5 V |
| 5 | COM2_TXD | OUT | +5 V |
| 6 | COM2_CTS# | IN | +5 V |
| 7 | COM2_DTR# | I/O | +5 V |
| 8 | COM2_RI# | IN | +5 V |
| 9 | GND | | |
| 10 | GND | | |
| 11 | COM3_DCD# | IN | +5 V |
| 12 | COM3_DSR# | IN | +5 V |
| 13 | COM3_RXD | IN | +5 V |
| 14 | COM3_RTS# | I/O | +5 V |
| 15 | COM3_TXD | OUT | +5 V |
| 16 | COM3_CTS# | IN | +5 V |
| 17 | COM3_DTR# | I/O | +5 V |
| 18 | COM3_RI# | IN | +5 V |
| 19 | GND | | |
| 20 | GND | | |
| 21 | COM4_DCD# | IN | +5 V |
| 22 | COM4_DSR# | IN | +5 V |
| 23 | COM4_RXD | IN | +5 V |
| 24 | COM4_RTS# | I/O | +5 V |
| 25 | COM4_TXD | OUT | +5 V |
| 26 | COM4_CTS# | IN | +5 V |
| 27 | COM4_DTR# | I/O | +5 V |

| Table A.19: COM2/3/4 & LPT (CN30) | | | |
|---|---|---|---|
| 28 | COM4_RI# | IN | +5 V |
| 29 | GND | | |
| 30 | GND | | |
| 31 | LPT_STBR# | OUT | +5 V |
| 32 | LPT_AFD# | OUT | +5 V |
| 33 | LPT_PRD0 | I/O | +5 V |
| 34 | LPT_ERR# | IN | +5 V |
| 35 | LPT_PRD1 | I/O | +5 V |
| 36 | LPT_INIT# | OUT | +5 V |
| 37 | LPT_PRD2 | I/O | +5 V |
| 38 | LPT_SLIN# | OUT | +5 V |
| 39 | LPT_PRD3 | I/O | +5 V |
| 40 | LPT_PRD4 | I/O | +5 V |
| 41 | LPT_PRD5 | I/O | +5 V |
| 42 | LPT_PRD6 | I/O | +5 V |
| 43 | LPT_PRD7 | I/O | +5 V |
| 44 | LPT_ACK# | IN | +5 V |
| 45 | LPT_BUSY | IN | +5 V |
| 46 | LPT_PE | IN | +5 V |
| 47 | LPT_SLCT | I/O | +5 V |
| 48 | GND | | |
| 49 | GND | | |
| 50 | GND | | |

# A.20 USB2/3 & AC97 (Audio I/F) (CN31)

```
 2  4              14 16
┌─────────────────────┐
│ ○ ○ ○ ○ ○ ○ ○ ○ │
│ □ ○ ○ ○ ○ ○ ○ ○ │
└─────────────────────┘
 1  3              13 15
```
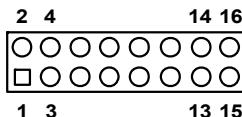
## Table A.20: USB2/3 & AC97 (AUDIO I/F) (CN31)

**Part Number: 1653005260**

**Description:   BOX Header 2*8P 180D(M) 2.0 mm DIP W/Lock**

| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | AC-SYNC | I/O | |
| 2 | +5 V | PWR | +5 V |
| 3 | AC-SDIN0 | I/O | |
| 4 | AC-RST | I/O | |
| 5 | AC-SDOUT | I/O | |
| 6 | AC-BITCLK | I/O | |
| 7 | +5 V | PWR | +5 V |
| 8 | +5 V | PWR | +5 V |
| 9 | USB2_P- | I/O | |
| 10 | USB3_P- | I/O | |
| 11 | USB2_P+ | I/O | |
| 12 | USB3_P+ | I/O | |
| 13 | GND | | |
| 14 | GND | | |
| 15 | GND | | |
| 16 | N/A | | |

# Mechanical Drawings

# Appendix B Mechanical Drawings
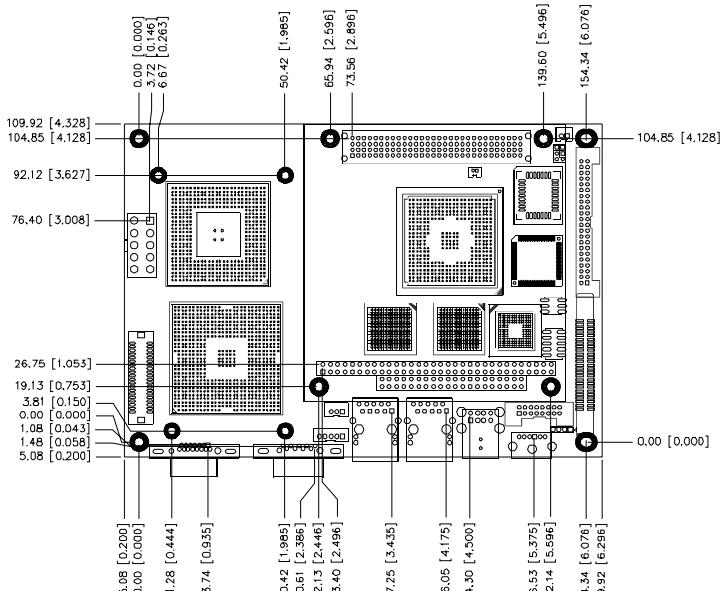


*Figure B.1: PCM-4386 Mechanical Drawing (Component Side)*
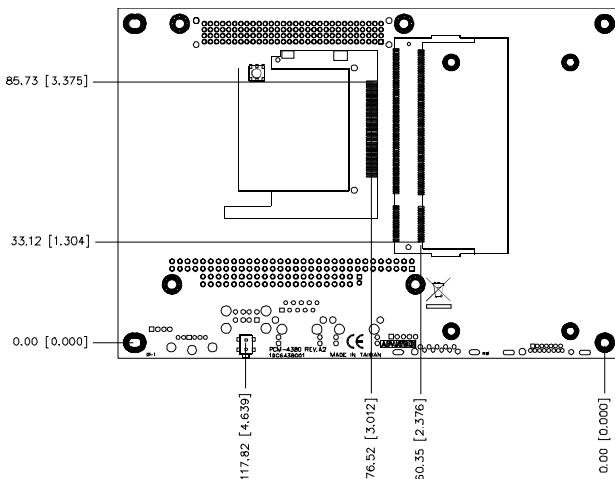


*Figure B.2: PCM-4386 Mechanical Drawing (Solder Side)*

# DC Input Timing

# Appendix C DC Input Timing (Reference as ATX 2.2)

## C.1 DC Input Timing
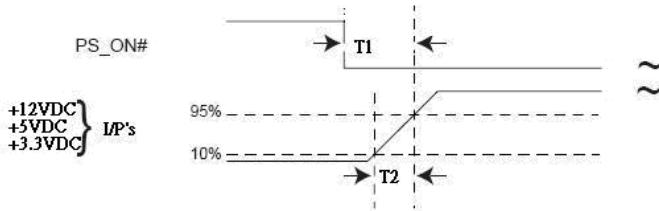


The power-on time is defined as the time from when PS_ON# is pulled low to when the +12 VDC, +5 VDC, and +3.3 VDC outputs are within regulation ranges. The power-on time should be less than 500 ms (T1 < 500 ms).

The output voltages should rise from ≤ 10% of nominal to within regulation ranges within 0.1 ms to 20 ms (0.1 ms ≤ T2 ≤ 20 ms). There must be a smooth and continuous ramp up of each DC output voltage from 10% to 90% of its final set-point within the regulation band. Smooth turn-on requires that, during the 10% to 90% portion of the rise time, the slope of the turn-on waveform must be positive and have a value of between 0 V/ms and [ Vout, nominal / 0.1] V/ms. Also, for any 5 ms segment of the 10% to 90% rise time waveform, a straight line drawn between the end points of the waveform segment must have a slope ≥ [ Vout, nominal / 20] V/ms.

| Table C.1: DC Input Timing Table | |
|---|---|
| **Signal Type** | **Timing Control** |
| Power-on Time | T1 < 500 ms |
| Power-on rise time | 0.1 ms ≤ T2 ≤ 20 ms |

APPENDIX

**D**

**Cables**

# Appendix D Cables

## D.1 Cables Table

| Table D.1: Cables | | | |
|---|---|---|---|
| **Cable Part No.** | **Cable Description** | **Connector** | **Terminating Cable** |
| 1700002034 | 3 COM and LPT cable | CN30 | FLAT Cable 44P 20 cm 3Com & LPT 1.27 mm to D-sub (Vendor: ) |
| 1701440504 | IDE Cable | CN27 | FLAT Cable 44P IDC 44P/44P/40P keyed 50 cm |
| 1700002055 | ATX Power Cable | CN1 | Cable 20P/10P 10 cm EPIC ATX Power |
| 1700060202 | Keyboard and PS/2 mouse | CN19 | Cable 6pin, 6-pin; 20 cm long: PS/2 KB & Mouse |
| 1700003931 | AT Power Cable | CN1 | Cable 2*4P/10P EPIC AT POWER 15 cm |
| 1700004891 | USB Cable | CN31 | USB CABLE 20 Pin TO 2 Port L=30 cm PCM-43 series |
| 1700001267 (PCM-4386U series only) | USB Cable | CN28 | CABLE USB*2/10-2.0 mm 29 cm |